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In the Cathedral at Chartres.

HERE, if anywhere, one ought to realise what a cathedral is that still serves the same purposes for which it was built. Here are chapels each with its altar; here, from morning till night, are worshippers, now more, now less; now perfunctory, now expressing in every line of the kneeling figure, the bowed head, and the clasped hands, a devotion, perhaps a sorrow, for which this alone is a fitting refuge. Here are lamps which burn for ever, here is the Blessed Tunic, and here the sacred image of the Black Virgin, and the thrice sacred image of Our Lady of the Crypt. And the great shrine that holds them all is worthy of them,—and of things even more sacred, if such be conceivable.

The Cathedral is said to be one of the largest in France; but what do a few feet more or less signify in a place like this? You cannot measure grandeur by the yard, nor weigh out solemnity in a scale. When you stand in the mighty nave, dim with the painted glass that has been there for six centuries, or when you pace the grand sweep of the chevet, with a succession of chapels on the one hand and the wonderful choir-screen on the other, while always overhead are the strong and nervous lines of the early vaulting, you are not concerned with statistics, you only think that nowhere, save perhaps at Westminster, has man reared a temple more worthy of his noblest conception. It is true that the choir was spoilt last century by some one who thought his tawdry stucco and his theatrical insincerities of sculpture not out of place in this solemn temple, but still so much is left untouched that this barbarity is the more easily condoned.

The Cathedral is dedicated to the Virgin; hers is the sacred tunic, and hers the two celebrated statues. To her honour all the splendid sculpture and painted glass minister, most of it directly, the rest through the Son of whom she was mother. All those solemn figures which adorn the three entrances, whether draped in the long, thin, and straight folds which speak of Byzantine influences, or in the less stiff, but still formal, manner of a century later; all the prophets, priests, and kings; all the saints and martyrs who "stand at a gaze staying," or sit in hazardous positions, or for ever suffer the tortures with which they sealed their faith,—all these are but the means by which the master workmen led the minds of the faithful to the contemplation of one central figure,—the Blessed Virgin. But what a page of architecture is here unrolled! At the west doors stand long, gaunt figures in an archaic style, derived from the East, and clearly retaining traces of Classic feeling in the acanthus-leaves and the ornaments of their pedestals. Gothic they are, but of a Gothic not yet quite free from the Classic from which it sprang. Go to the north entrance, and, amid its wealth of figures, and sculptured niches, and bases, and canopies, you will find work in regard to which a close scrutiny will not decide whether it is original, or inserted at the Renaissance—whether it is Classic still retained, or Classic reintroduced and modified to harmonise with its earlier surroundings. Not less rich, but less puzzling, is the south entrance. The whole of the work is Early, but here it is undeniably Gothic. All the porches are replete with figures; there are thousands of them; it is a wonder they could have been completed during the prevalence of a single phase of architectural style, and yet, owing to their subordination to their parent, Architecture, they produce an effect quiet and yet grand; not gaudy, restless, and grandiose, as would have been the case had the decorator of the choir been at work.

So, too, inside. In the structure itself, but little sculpture is applied. There are great *griffes* to the bases of the huge columns, and the capitals are carved with the dignified simplicity of early French work,—a deep band for the great central column and a smaller one for the four shafts attached to it. But look at the screen surrounding the choir. On its outer side it is a mass of carving, more than 200 ft. long by some 15 ft. high, and not one square foot untouched by the chisel.* This, too, is in honour of the Virgin. It sets forth her whole history, from the announcement of her birth, in the first compartment, to her coronation, in the fortieth. Apart from its intrinsic merits, the whole work is of singular interest from its date (1524, *et seq.*) and the manner in which Gothic here melts into Renaissance.

The screen is divided into wide bays by shafts. The lower part of each bay is panelled; the upper part is elaborately canopied, and the space below the canopies is filled with groups of statuary which already seem to be casting off the restraints of architectural composition, and to be striving for an independent existence. The eight westernmost bays on each side seem to be somewhat earlier than the rest. The panelling of the bays is Gothic,—late Gothic, it is true, but Gothic,—with cusps and crockets and bases; and the change towards Renaissance is chiefly observable in the caps, and more particularly in the shafts which divide the bays. These are composed of groups of shafts enclosing plain surfaces; the shafts still have Gothic bases, and blossom into Gothic pinnacles at the top. The upper plain surfaces, too, have Gothic panels with flamboyant heads; but the lower are all carved with beautiful Renaissance designs in low relief, some retaining the general appearance of tracery, others showing a decided inclination towards the birds and fishes, and urns and flowering creatures that form the staple of Italian ornament. The effect is curious. At a short distance the work looks like late Gothic; it is only on close inspection that you see how the new spirit has already seized it. Further to the east the change is more visible; here the panels of the bays are obviously of the Renaissance; the lines of the tracery in the wide bays still have bases; but they are all covered with carving in which no trace of Gothic is left. The large shafts, too, are no longer groups of smaller ones, but are square pillars, each face sunk, and delicately carved. At stated intervals, however, the old idea is retained, and there still occurs, as before, a group of shafts. But the very shafts have felt the change of style; the bases are different; strange little wreaths embrace them, looking at a distance like small crocketed canopies; the caps are all in the new style, and so are the canopies over the statues, all retaining the old arrangement, but all wrought in the new fashion. In the broader spaces of the work the new style reigns supreme. There is no feeling of Gothic in the round panels that enclose the heads of "Titus Cæsar," or "Domicianus Cæsar," or "Neron le Cruel Cæsar." They may, perhaps, even strike us as somewhat incongruous companions to the saintly personages that pose above them. But the carving itself,—no words can describe its delicacy, both of fancy and workmanship. There are shells and bands and flowers; dainty little cupids, and spears and shields; vases and dolphins and griffins, and all the devices which the exuberant imagination of that age produced. And they are all carved

* An illustration of part of this screen was given in the *Builder* for June 14, 1884.

in low relief with a minuteness, a firmness, and a precision that would defy all but the most skilful draughtsman to reproduce, even full size. How different this from the great unbroken surfaces of the massive pillars of the church, or the large, vigorous leaves that adorn their capitals.

But not less wonderful than the infinitude of carving is the vast array of painted glass. Hardly a window in the enormous pile but has its glass, placed there when it was built. What is not of the thirteenth is of the twelfth century, filling 175 windows, large and small. One hundred and seventy-five stained-glass windows in one church—think of that. The windows, too, all tend to the glory of the Virgin, and repeat in brilliant colours the stories told in sober stone without. In the aisles they are crowded with histories from the Bible and legends of the Saints. The little figures show, by their stiff attitudes and their impossible joints, that the men who drew them possessed an ignorance of anatomy and biology as cheerful and profound as do those who worship beneath them at the present day. In keeping with the small figures are the minute diapered backgrounds interlaced in blue and red; and, owing to the quantity of lead lines necessary for the work, the dirt has collected during the six centuries of their existence till in many places the light can hardly struggle through at all, and where by accident some trifling scrap of glass has gone the rays come through with dazzling intensity. They are indeed "rich windows that exclude the light." Of far simpler design are the great clearstory windows. Here, as a rule, a single figure occupies the field. Above and below are accessories in the form of an incident in the life of the personage represented, but all is larger, and more easily understood. This is painted glass at its best—simple design, noble (if conventional) drawing, and splendid colour. The effect of the long array of saints in brilliant robes, and warriors in the glowing garb of heraldry, surrounded by many-coloured borders, and adorned with all the splendour that an age of gorgeous costume could suggest, is indescribably imposing, and is not a little enhanced by the unconscious knowledge that as to-day they shed their light, so have they shed it on six centuries of worshippers.

It must ever be remembered that all these embellishments, which we English are apt to regard merely as embellishments, have here at Chartres a very living meaning, and furnish texts for discourses to the faithful from those who compile the pilgrims' guides. And the two celebrated statues, that of the Crypt and that of the Pillar, call forth feelings of very devout veneration,—though whether they who adore first one and then the other; who hang up in the crypt a lamp to burn night and day, and then go and kiss the cold Pillar as though it were warm flesh and blood,—whether these good people think these were two distinct Virgins, or whether their minds are sufficiently subtle to regard the two statues as two ways of presenting one great truth, it would be useless to inquire, for all religions have their mysteries. But the two famous statues do not claim all the worshippers. Every chapel has its saint, and to every saint come many devotees. Now it is some well-dressed lady from the town; occasionally (but very seldom) it is a man; and then perhaps it is a peasant woman in blue apron and white cap, carrying a little child who, regardless of the sanctity of the occasion, actually cries for the candle which its mother offers to the saint, as though it were a toy brought for its own tiny delectation! These are the folk for whom all this splendid architecture grew, and not for people who go round our English cathedrals, and wonder what those recesses called chapels were used for, and think the place very fine, and the glass very old, and the statues very curious illustrations of the strange ideas people had in those days.

No, it is here at Chartres, the bourne of many pilgrimages, that the real significance of Gothic architecture can best be caught; and only by the blaze of a great procession can the full value of length and loftiness be fully realised. On the last day of May (the month of Mary), the black statue is taken from its pillar and carried in procession. Its ordinary garb is taken off, and, clad in cloth of gold, borne by four, beneath a gorgeous palanquin, it makes the round of the church. Before it go hundreds of girls in white, all discreetly veiled and carrying each a lighted taper. In front goes a grand functionary in a cocked-hat and splendid costume, armed with a staff with which he now thumps the floor, and now clears the way, and after them come the little boys in red cassocks and lace surplices, and as they go they sing a monotonous litany, soon drowned in the roaring of the shaven priests who follow, still all with candles; and the look of disgust which a priest gives when the hot wax falls on his hand in the solemn procession is a thing to remember. Among the priests is one who carries a wind instrument from which now and again he produces a mellow note to keep the chanters in tune. At last comes the black statue,—the black Virgin and the black Child,—and as it passes, down the people go, down on their knees to the black Virgin, and bow their heads till she be passed. And the candles light up the massive pillars, and even flicker on the vaulted roof; and behind the blazing choir are the dark spaces of the chevet and the deserted chapels of the minor saints. Down the nave, and up the aisles, and round the sculptured screen of the choir goes the long and brilliant line, and having made the full circuit, it gradually melts away, for the girls disperse, and only those who belong to the church remain with their tapers to see the statue come to rest before the pillar on which she generally stands. And while she waits in front of the pillar, the faithful flock towards her and rub their rosaries reverentially on her robes. And presently a priest comes, and, as far as he can do it (for the faithful flock in a great crowd), he takes a rosary in each hand and presses them, one against the black hand of the Virgin and the other against the black hand of the Child, and then he crosses hands and presses again, so that each rosary may touch each sacred hand. And the faithful struggle who shall be first to have the mysterious virtue pass into their rosaries. And this done the faithful pass round to the pillar, now without its image, and the pillar they kiss as though its chilly surface were the face of the beloved. On both sides they kiss it, with lingering kisses mostly,—though some young boys care no more for it than if it were their sister. Young and old come, rich and poor, but they are all women and children and boys,—no men. And babies are held forth to kiss it; and a little child comes, who can hardly lean over the railing far enough to touch it with the points of her little lips. And at the sight of all this the heart grew sick, that this, too, should be part of the noble temple as much as its carved statues and its beautiful glass.

But the last rosary has been blessed, the last kiss given; the golden robes have been removed, and the daily garments replaced; the unwieldy statue has been carried up with much loss of breath, and placed upon the pillar; a solemn gloom once more envelopes the church, save where the light flickers from the candles of those busied with the black image; the great door has shut, and once more the statues of the porch seem, on either hand, to gaze with melancholy eyes on the stranger who steps forth from the dim Mediæval world again into the glare of every-day modern life.

Appointment of a Diocesan Surveyor. A meeting of the Archdeacons and Rural Deans of the Diocese of Norwich was held on Saturday last for the purpose of appointing a Diocesan Surveyor, in the place of Mr. E. P. Willins, deceased. The following were the candidates:—Messrs. E. J. Colman (Lynn), T. Garratt (London), H. Gage (Bayswater), A. J. Lacey (Norwich), H. Olley (Yarmouth), J. B. Pearce (Norwich), and J. E. Teasdel (Yarmouth). The result of the voting was that Mr. Arthur J. Lacey was elected.

THE LIFE OF VIGNOLES.

THE author of the biographical memoir* of the late C. B. Vignoles concludes his work with the remark that "with C. B. Vignoles the romantic era of modern engineering science may be said to have passed away." The remark indicates rather aptly the nature of the interest attaching to the biography. As far as the earlier era of modern engineering may be considered as romantic,—and it certainly was so in a sense, in regard to the novel prospects and untried fields of enterprise which it threw open—no figure could better represent the romantic side of it than that of Vignoles, half-soldier half-engineer, excitable in nature, rash and sanguine in his speculations, half ruined in middle life by his own quixotic daring in taking up nearly the whole financial responsibility of a new line rather than see the enterprise checked, and then, with untiring enterprise and energy, recovering in foreign work the success which had slipped from him in England. He was constitutionally of a combative nature, and his whole life seems to have been more or less of a fight; but, like not a few other hard fighters, he lived to a good old age, dying after three days' illness in his eighty-third year, and after having enjoyed almost uninterrupted good health all his life, in spite of often going through fatigue and overwork, during the great period of railway struggle, such as would have permanently impaired any but a very strong constitution.

"Mens sana in corpore sano" could hardly, however, have been applied to Vignoles. His character wanted balance and self-restraint, more particularly in earlier life, as the personal details in regard to his conduct in various circumstances fully indicate, and as his biographer admits. Most of the difficulties and drawbacks which he met with in his professional career seem to have been more or less of his own making, or at least might have been escaped with more of prudence and forethought than he usually displayed. His faults, however, were of the kind which the world has never had the heart to judge hardly; the faults incident to impetuosity and *insouciance*. He might probably have built up a large and solid fortune, but he was habitually careless both about making and about spending money; not looking after his own interests in the making, and dealing it out lavishly when it occasionally flowed in of its own accord. It is characteristic of him to read, in regard to his Russian professional journeys, that "he was served as zealously in Russia by post-boys as he invariably was in all parts of Europe, as his *pourboires* were always on a very liberal scale." Equally characteristic was the way he got up his scheme for the Kieff bridge over the Dnieper, to bring it before the Emperor of Russia. He heard of the Emperor's desire for a bridge at Kieff from an old brother officer who was Consul-General at Warsaw, and at once set to work on a set of geometrical drawings for a bridge, with a perspective view showing it as it would be when completed. But, says the biographer, "Vignoles never did things by halves, and in this case, when the drawings were finished, he had them mounted on silk, and bound superbly in morocco leather, with an embossed gilt title over the arms of Russia. The portfolios were placed in oak cases lined with velvet," &c. All this, be it remembered, for a chance commission, merely to bring the thing before the Imperial eye in a striking manner. This might have been mere worldly shrewdness in some people; we do not think it was merely that with Vignoles; it was a part of the man's luxuriant nature, which could not be content to do things in a plain and ordinary manner; and we surmise that it was not done so much to dazzle the Imperial eye, as for his own personal

* The Life of Charles Blacker Vignoles, F.R.S., F.R.A.S., M.R.I.A., &c., Soldier and Civil Engineer, formerly Lieutenant in H.M. 1st Royals, Past-President of the Institution of Civil Engineers. A reminiscence of early railway history. By his Son, Olinthus J. Vignoles, M.A. London: Longmans Green & Co. 1889.

pride and satisfaction.* Equally characteristic is the incident named in a family letter, of his unexpected appearance at his family Christmas dinner in weather in which the roads were all but blockaded with snow and all the mails stopped. Vignoles had been in Ireland, but had promised to join his family on Christmas Day, and he had, as his daughter writes, posted day and night through the storm from Holyhead on purpose to keep his promise; arriving just in time. These are only a few of the many indications we get in the "Life," of his genial and exuberant nature.

Many who are familiar with the name of Vignoles as an engineer are probably not aware that he began life as a soldier, and had his share of sharp fighting. It does not appear that much is known as to his early education; he seems first to have been articled to a lawyer, and a year or two afterwards is found studying at Sandhurst, and subsequently with a commission as ensign, but there seem to be no materials for a connected narrative, nor can it be said that the information that is given is very lucidly arranged. That is a fault in the book throughout; it is written in a simple and unpretending style, but not in good literary form, and is consequently somewhat troublesome and inconsecutive reading. Vignoles's own letters, where they are quoted, as they often are at length, are always good reading, and are exceedingly spirited and picturesque in style. This is especially so in regard to the letters of his military period, which constitute an amusing medley of descriptions of all kinds of things, from pretty serious skirmishes to private theatricals, and his hurried kind of half-clandestine marriage at Gosport in 1817, with the lady to whom he had long been privately engaged, and who seems to have been worthy of a far more ceremonious reception into the family than was accorded to her. But of the circumstances which led Vignoles to abandon the military for the engineering life, which is naturally the most interesting question to the majority of readers of the book, we can gather no certain information at all; the author seems to have little but surmises to offer, and even these are given in so random and unconnected a manner that it is difficult to follow them. All we can collect is that Vignoles became at an early period dissatisfied with the prospect of a military career, and disposed to make the best of his talents in any other direction in which he could find an opening for them, and that he developed gradually into his new profession through the experience and interest gained in the course of various odd commissions in surveying, and that on August 21, 1821, he writes from St. Augustine, Florida, that he is nominated Civil Engineer and Surveyor for that city. In fact, he seems to have dropped into a professional career and professional work exactly in the way that poor Martin Chuzzlewit attempted with more confidence and less success, viz. by going where he thought engineering work was wanted, and turning his natural talents and his knowledge of surveying to account; though where and when he procured this knowledge there is really nothing in the book to tell us. He appears therefore to be a rather remarkable example of a talented and in many respects successful engineer who received no regular training for the profession, but learnt it as he went on. The result, at all events, speaks highly for his native talent and energy.

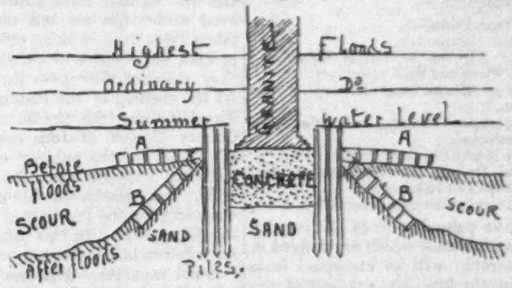
As "a reminiscence of early railway history," which is the subordinate affix on the title-page, the Life is defective, because the writer is not practically acquainted with the subject; and in this respect it would have been better if the biography had been entrusted to some one having more practical acquaintance with engineering work. A good deal is told which is interesting, but it is told in a very desultory and rambling fashion. Before the actual railway work is entered on at all, it is sad to read of the comparatively early death, hastened by anxiety and trouble from various causes, of the noble-minded woman who had been Vignoles's first love and his first wife. Few will read the volume without a regret that such a true and high-minded wife as she evidently was should have lived only during the troubled times of her husband's life, and not survived to share his success.

The second section of the book deals with Vignoles's English railway work, a class of work into which he first entered by executing some surveys under Rennie the younger, and he was resident Engineer on the Liverpool and Manchester line from 1825 to February, 1827. It is the writer's object, naturally enough, to show that Vignoles in reality took a more important part in this and some other early railway schemes than is generally accorded to him; we are quite willing to believe that this may have been the case, but the evidence for it (so far as it can be called evidence) is given in such a desultory and rambling manner that it is impossible to make anything decisive out of it one way or another. It is noteworthy that he had, more than half a century ago, formed a decided opinion in favour of the feasibility of a tunnel under the Mersey, which is certainly one indication that his ideas were ahead of his contemporaries. It is noteworthy that he also had the idea of a railway-bridge over the Mersey at Runcorn Gap, just where such a bridge was in 1880 constructed.

The incidents mentioned in this part of the work as to early railway travelling are in some instances new, though they are of very much the same type as the reader of any history of railroad undertakings is by this time pretty well used to. The author, however, has been enabled to add to his work some old engravings of railway stations &c. in 1832, from the "Binns Collection" at Liverpool, which give a new interest to the subject.

There is more special interest in the account of Vignoles's experience and opinions in regard to the laying of rails for a permanent way. It would surprise many readers to learn that Vignoles had in the first instance been, like others of his contemporaries, much taken with the idea of a rigid rail laid on stone supports. Among those who advocated this system, however, he was the first to see and acknowledge the error. Of late years we have heard propositions for a rigid rail and an elastic wheel, but they seem to have come to nothing. A rigid rail and a rigid wheel could never have even been momentarily supposed possible with the high speeds of the present day. But Vignoles was more obstinately heretical on another point, that of the superiority of longitudinal sleepers to cross ones. Of course along with the longitudinal sleepers went the Vignoles rail, which was really a clever thing, but it was only suited for longitudinal sleepers and only for a rather light traffic, unless the rail were rolled at a weight of section which would render the cost pretty nearly prohibitive. Still the Vignoles rail has played and is playing a considerable part in the world, in those regions where cheap construction is one of the first objects and where high speeds and heavy engines are not part of the programme. As to the longitudinal sleepers, it is necessary to bear in mind that those who discussed the question at the period we are speaking of had to do with much lighter engines and carriages than those of the present day, before we can understand how able practical men could seriously prefer this system to the cross-sleeper system, or could be blind to the fact that the cross-sleeper system practically spreads the bearing of the weight over the whole ground covered by the train, instead of over a strip under each rail only, while the construction itself forms the most complete and continuous tie between the two rails. The author does not blink the facts as to the disuse of the continuous sleeper system; indeed we believe he goes rather farther than the fact in saying that the whole Great Western system has been pulled up and replaced by cross sleepers, as we believe this change is not yet completely made; but he evidently thinks that this has been all a mistake, and that Vignoles was right in his theory. Experience, however, has settled what theory ought to have settled from the first. In a true scientific sense, the continuous sleeper never had a leg to stand on, and its demolition was a foregone conclusion.

In the third portion of the book, dealing with Vignoles's foreign work, the most interesting chapter is that in regard to the bridge over the Dnieper, before referred to. The difficulties of forming the foundations, before the days of iron caissons, were very great, owing to the sandy nature of the bottom and the great rise and velocity of the water in flood seasons. In this work Vignoles employed a system then largely in use by the Dutch engineers for protecting foundations from scour, of forming what were called fascine "mattresses," consisting of large woven baskets of great size, (in this case 40 ft. by 20 ft. in area), divided into square compartments like gigantic wine-baskets, which were loaded with stones and sunk on either side of the foundations of the piers. The accompanying rough sketch from the diagram given in



the book shows the position in which these were first placed, and the angle to which they subsequently deflected under the influence of the scour; A representing their original position, and B the position to which they subsided. The author says that "in all other respects they remained immoveable, and there they remain to the present day, a bulwark against the tumultuous spring floods. It is really a curious sight, in the middle of summer when the water is very low, to observe how the fascine work has formed, as it were, islands of greenery round each of the shallow water piers. This is easily understood, as the interstices between the stones in the cells have gradually been filled with sand and mud, which has nourished the branches, and converted the mattresses into living brushwood." The then emperor took a great interest in the work, and showed a flattering confidence in his English engineer, giving him *carte b'anche* to carry out the work in the manner he thought best, but it is recorded that Vignoles suffered heavy pecuniary losses from the then rampant system of bribes to officials of every class, without which nothing could be got done or agreed to at all, even in operations nominally under State control. Vignoles's long absences from England over this work appear also to have had a very prejudicial effect on his position in England, and we are told he had the mortification of seeing many of his schemes and proposals in connexion with English engineering passing into other hands, whilst their original author and designer was in great measure pushed aside. Perhaps the constitutional inability to look with prudence after his own interests, which had more or less injured him all

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* He says in a letter in his earlier days, "I must tell you that Petitvale and myself are much improved in our drawing. I made a magnificent title to the Graves' plan, and the map was the admiration of all who saw it."

through life, had something to do with these disappointments also. In 1869, however, at the age of seventy-six, he received the honour of election as President of the Institution of Civil Engineers.

As a record of the life and character of a man who filled a very large place in the engineering work of his day, and who was in other ways a man of very remarkable and original character, the "Life" will have permanent value and interest, though written, as we have already implied, in a somewhat confused and inconsequent style; and making all allowance for natural partiality on the part of the writer, it certainly leaves the impression that Vignoles had been a man in advance of his time in regard to many of his professional ideas, and that in some cases, at all events, he has never received the full credit which was his due.

NOTES.

THE Institute of Architects has issued its circular in regard to the proposed preliminary examination of students to qualify for registration as Probationers of the R.I.B.A., in pursuance of a scheme which we have before referred to, by which the Institute seeks to assist those who are intending to follow the profession of architecture in the earliest period of their studies, and to make a kind of selection of the fittest to enter the profession through the gates of the Institute Examination. The first examination "of architects' pupils or improvers, or of other gentlemen intending to follow the profession of architecture" will be held by the Institute of Architects in November of this year, and will embrace the following subjects:—

"1. Writing from Dictation.
2. Short English Composition.
3. Arithmetic: Algebra to Simple Equations; the Elements of Plane and Solid Geometry.
4. Geography of Europe and History of the United Kingdom.
5. French, German, Italian, or Latin: one language to be selected.
6. Elementary Mechanics and Physics.
7. Geometrical Drawing or Elements of Perspective: one subject to be selected.
8. Freehand Drawing from the Round."

Those who have passed certain University and school examinations, which are defined in a further paragraph, will be exempted from examination in the first six subjects of the programme. Each one of those who pass the examination and is admitted as a Probationer will be qualified for registration as *Student R.I.B.A.*, and his name will be inserted in the calendar of the Institute as such. A "student" on passing the final examination to be passed by "students" who have attained the age of twenty-one years, will be qualified to become a candidate for associateship. The secretaries of the Institute will furnish any further particulars in reply to inquiries addressed to them at 9, Conduit-street, Hanover-square. The scheme appears to us to have the double advantage that those who have the requisite ability for the practice of the profession of architecture will be at an early period assisted and stimulated in a course of systematic study, and those who have no ability such as would give them a probability of success in the profession will be in the way of finding it out before it is too late. We hope many of the young men who are thinking of the profession of architecture will enter for this Probationary Examination, and that "Parents and Guardians" will encourage them so to do: we believe they will find the advantage of it in more ways than one.

FROM an advance proof forwarded to us of a report on the condition and construction of the Connemaugh dam, made by Mr. Brinckerhoff for the *Engineering and Building Record* of New York, we learn that, as we expected to find, the dam was an earthwork merely, and had not even the usual puddle wall in the centre, but this is explained on the ground that the whole mound was formed of what was practically puddle. The direct cause of failure appears to have been subsidence in the centre from percolation of water into the dam, forming a weak point which the accumulated pressure from storm-water immediately found out. It also appears that what the Americans call the "spillway," the overflow channel at the side of the dam to provide for the rising of the water in storms, was too small for its work, and that had it been of larger section the catastrophe might have been much reduced in its effects, though on the other hand the torrent from the spillway itself would in that case have formed a source of danger and destruction. In fact, taking the circumstances as narrated, we doubt if any overflow would have saved the dam except one so large as to have amounted in itself to a dangerous flood. If it is true that the material of the dam was practically puddle, it does not appear that it was worse in its construction than other dams of the kind; and the lesson is, what we said at first, that earthworks cannot be depended on for reservoirs on a large scale. A very slight and slow percolation of water into such a dam is the beginning of a great and serious mischief, which may be progressing for some time unnoticed, and only become known, too late, when a storm brings the whole suddenly to a severe test.

THE London County Council has, on more than one occasion, shown that its members hold very comprehensive views as to the extent of the functions it should exercise. The control of the electric lighting of London seems to this body too big a thing to be left in the hands of the Board of Trade and the various local authorities; but the local authorities are not disposed to have taken from them, without entering a vigorous protest, the decision of questions with which they consider they have the right to deal. At the meeting of the Paddington Vestry on Tuesday, June 18th, the letter of the London County Council of June 5th, to the Board of Trade, on the subject of the Electric Lighting Applications for the Session 1889, was considered in connexion with a report from the Paddington Electric Lighting Committee. In this letter, to which we have before had occasion to refer, the County Council suggests:—That no Vestry or District Board shall be allowed to purchase electricity from any company and retail it to consumers without first obtaining the sanction of the Council; that the powers to make subways, into which the companies shall be compelled to put their cables, should be vested in the Council; that provision should be made to prevent the opening of any thoroughfare in the County of London for the purpose of laying mains, &c., without the consent of the Council; that if the Council is made the controlling authority it shall be empowered to discharge the following duties, viz., "Inspection of lines and works," "Testing currents," "Testing and certifying meters," "Taking proceedings for imposition of penalties or forfeiture in cases of default as provided in the Orders." The Paddington Vestry has recorded its opposition to the letter of the Council by taking "the strongest exception to the proposals therein made for transferring the control and purchase of the electric lighting in the Metropolis from the City Corporation, the Vestries, and the District Boards to the County Council." Until the exact scope of the functions of the local authorities on the one hand, and of the London County Council on the other, has been more clearly defined than it is at present, this is but one of the many disputes that will arise in the near future. There are, unquestionably, many regulations that should apply equally to all electric lighting companies, not only in London but throughout the kingdom. Such things as the testing of currents, the testing of meters, &c., should be undertaken, if possible, by one central authority. To make electrical measurements with a fair degree of accuracy is easy enough, but to make them with *absolute* accuracy requires not only costly and delicate apparatus, but an operator possessing no ordinary skill and technical knowledge. For example, the figures obtained from a measurement of the power conveyed by an alternating current will vary within certain limits according to the methods adopted. If, therefore, absolute accuracy is so difficult to obtain, the next best thing is absolute uniformity. A Board of Trade unit, as supplied and metered by a company, may or may not be exactly in accordance with the scientific definition given to it; but if it means the same thing all over London, the matter is by no means as serious as it would be if the unit charged for differed in value with the local authority in whose district it was supplied. This end is clearly best attained by placing measuring and standardising under the control of but one body. When, however, it is remembered how different will be the conditions of supply in different districts, surely such questions as the breaking up of roads, the retailing of electricity, &c., and special regulations ought to be considered by the local authorities, who must, or should, know most about local conditions and requirements. The question of the advisability of centralisation and decentralisation seems no nearer settlement than it has been hitherto. Electric lighting from large central stations is as yet unhampered by vested interests, and it is to be hoped that no hasty decisions will prevent the adoption of efficient means of control, equitable alike to the public and the companies, which are so sadly lacking in the cases of water and gas.

IT appears that the Board of Trade circular of June 10, referring to the objections to the new railway rates (see p. 442, *ante*), does not meet with the approval of some of the leading trade organisations which are dealing with this question. Lord Henniker's Railway Rates Committee and the Railway and Canal Traders' Association concur in the opinion that the step proposed by the Board of Trade is unwise; and they advise individual traders not to enter into negotiations with the companies unless they can secure competent advice and guidance. The former body, in a resolution passed at a recent meeting, urge that the settlement by the Board of Trade of all the questions of principle in dispute would tend to determine many of the details which, it is now proposed, shall be the subject of negotiation. The Railway and Canal Traders' Association have themselves lodged a very formidable list of objections, extending over eight pages, which, if they could be sustained, would render ineffectual many compromises which individual traders and the companies might arrive at,—particularly with regard to the details of the classification. For example, the Association objects to the classification *in toto*, "as it is inconsistent, and framed upon no recognisable principles." It is further contended that "no satisfactory basis of classification can be arrived at without a full inquiry into the cost of carriage of various descriptions of merchandise." Terminal charges are, of course, strongly objected to, and some forcible arguments are adduced in support of the position taken up by the Association on this point. There certainly does not seem much prospect of a speedy settlement of the question at present.

IT is not surprising that the Coroner's jury on the Armagh railway tragedy should have returned what amounts to a wholesale verdict of manslaughter all round against those who were directly concerned with the management of the train. The verdict will probably not be borne out in the same sense against all concerned, when the question of responsibility comes to be more fully considered at the trial; and it would of course be improper for any journal to anticipate justice by attempting to fix the real responsibility in advance. The whole history of the disaster reveals a degree of concentrated stupidity such as is rarely met with in connection with railway

management, and we may perhaps say, never in England; at least we can hardly imagine any railway guard on this side the Irish Channel giving an order to uncouple carriages on an incline before ascertaining that all brakes were on and every necessary means had been taken to ensure the holding up of the carriages on the slope. In regard to the question of the sufficiency of the engine, sufficient stress does not seem to have been laid on the fact that the driver had never gone over that part of the line before, according to the evidence. His opinion as to the sufficiency of the engine may therefore have been honestly given in ignorance of the nature of the gradients, and he may have been correct as to the powers of the engine on the assumption that there were no "banks" of any importance. On the other hand, it seems to say the least, a most rash and ill-advised thing to entrust the driving of an unusually heavy train to a driver who did not know the peculiarities of the road, considering especially what an immense difference even a very moderate gradient makes in the hauling power of a locomotive. When the opinion of the engine-driver was taken as to his having power enough, it was evidently forgotten that he was a driver who did not know the road, and that his opinion was therefore worth little or nothing. This was the first error of judgment, which might however have passed off without fatal consequences but for subsequent and more flagrant blunders, to call them by the mildest term.

THERE is no more useful work done by the judges than that of protecting shareholders against directors. Theoretically, directors of limited companies are the agents of the shareholders; in practice they are generally the shareholders' masters, and many directors seem to think that companies with which they are connected exist altogether for their benefit. In the case of Eden *v.* the Ridsdale Lamp and Lighting Company, which has lately been decided by the Court of Appeal, the plaintiff, after the Company had been formed and the shares issued to the public, received as a gift from the vendor of the business of the Company 200 of his shares. The Court of Appeal decided that he had no right to receive them, and that the Company were entitled to recover their value from him. This decision will do something to protect shareholders against such action on the part of directors for the future. But there is no doubt that if shareholders would only take a little more trouble to look after the affairs of companies in which they have an interest they would not require, as they now often do, the protection of the Court.

THE editors of the "Monuments Grecs," published from time to time by the "Association pour l'Encouragement des Études Grecques," can certainly not be accused of any unseemly haste. Their last issue appeared in 1884, and now we have a single number, dated comprehensively 1885–1888. The Association set to work in 1872, and probably at that time Greek studies were badly in need of "encouragement" in France. This is no longer the case, and we are tempted to wish that a publication so tardy would merge its material in one of the many other French archæological organs. However, though late, the new number is undoubtedly interesting. It is entirely devoted to Greek vases, and this is no matter of regret, as the Louvre collections, from one cause or another, contain more important unpublished vases than any other of the old European collections. M. Collignon has a paper on the Athenian cavalry as they appeared on vases, and he publishes a vase with this subject signed by Euphronios. M. Léon Heuzy writes on the somewhat mysterious heads and busts of women that appear on vases, and some of which, so far, lack a perfectly satisfactory interpretation. M. Pottier, who is always well worth reading on the matter of ceramics, publishes a very interesting vase, decorated with scenes in relief from the myth of Œdipus. These vases, with relief designs of this special set, come, for the most part, from Bœotia. The British Museum has an interesting specimen, depicting a scene also from the mythology of Œdipus; the blind Œdipus near the body of Jocasta. The Louvre cup represents an earlier scene, the "foundling child" received into the palace of Polybos. Its special interest is that it seems to follow the version,—probably a local one,—of Hyginus, not of Sophocles, as the mother is inscribed Periboia, not Merope.

THE long-looked-for plan of the Acropolis has at last appeared in the much-belated March number of the *Δελτίον*. It is not signed, but is we presume, as was promised, from the hand of Dr. Kaweran. It is accompanied as yet by no explanatory text, but to those who have followed with any care the course of the excavations (from 1885—1889) it speaks for itself. The position of such newly-discovered buildings as the "Old Athene Temple," the "House of Erechtheion," and the "Temple of Roma" is already well known by all archæologists from previous plans. The great service that the new plan renders is that it makes clear at a single glance a subject far more complex, a subject difficult indeed to understand even on the spot—*i.e.*, the arrangement and superposition of the various fortification walls of the Acropolis, structures of "Pelasgian," pre-Persian, Cimonian, Periclean, and Roman date. The plan is given in four colours. Blue represents Pelasgian remains, and all polygonal masonry is clearly indicated by indented lines; yellow is kept for buildings actually modern — *e.g.*, the museums; black, for work which is of the date of Pericles—*e.g.* Propylæa and Parthenon. The use of the fourth tint is not so clear: it seems to indicate any building that will not come under one of these headings. The "Old Athene Temple" and Beulé Gate are both drawn in grey—this seems to be a great blot on the clearness of the whole. Next in interest to the wall structures will come the buildings in and about the precincts of Artemis Brauronia; the foundations of these are now made as clear as they probably ever will be. Unhappily there is no foundation which can with any show of probability be supposed to belong to a temple. Probably the goddess had only a sanctuary with colonnades.

WE are glad to see that the work in connexion with the restoration of the Church of St. Mary-le-Strand has been commenced, although the Rector, the Rev. L. Tugwell, states that upwards of 1,000*l.* is still required to make up the cost of the work. We welcome the commencement of this too-long deferred work because the dilapidated and woe-begone aspect of the church, and the unsightly hoarding which surrounds it, have been glibly spoken of and gleefully pointed at by the advocates of the removal of the building. When the church is restored and the hoarding removed, the would-be Vandals will be deprived of two of what they deem to be their strongest arguments against the retention of the church. Since these words were written, indeed, we see that a letter has appeared from the "Strand Highway Improvement Association" almost admitting as much. When the hoarding on the south side of the church is removed, it will be found that the width of that part of the Strand will compare very favourably indeed with its width in other parts, and it will then, we venture to say, be evident to the meanest capacity (outside a Fleet-street newspaper office) that there is no need to remove the church in order to make room for the traffic of the Strand.

THE Sub-Dean of the Chapels-Royal asks in the *Standard* for contributions,—by way, we presume, of either history or fact,—to his projected account of St. James's Palace. In our columns of Oct. 22, 1887, we gave a brief outline of the story of King Henry VIII.'s "Manor House." Having since had occasion to investigate the *provenance* of the "warming-pan plot," we compared some plans and views of the buildings with a survey annexed to "A Full Answer to the Depositions . . . . Concerning the Birth of the Prince of Wales. The Intreague thereof Detected," &c., &c. London: 1689. Readers of Macaulay and Howell's State Trials will recollect how, in October, 1688, the King felt it necessary to produce before his Privy Council proofs of a birth which was stubbornly denied by the ultra Church of England party. The plan referred to is of signal topographical value, inasmuch as we clearly see therein the positions of certain portions of the precincts that have yielded to later changes. The following, for example, are thus indicated by name: the dormitories and entrance to the convent; the cloisters, with grass-plot and Friary garden, whose easy Capuchins kindled Pepys's envy; the chappell (Queen Katharine of Braganza's); a burying-place (lying eastwards of the first court next "Pell Mell," and the Protestant Chappell, the existing Chapel Royal. A dotted line delineates the route along which, as alleged, the infant was conveyed by the Jesuits from beyond the cloisters, at the north-eastern corner, to the "Queen's great bed-chamber," wherein are marked the "Bed" and its "Ruel" in the south-western angle of the palace, adjoining to the "King's Lodgings" in this the southern front. Each of these two sets of apartments has a set of "back stairs," which are approached through the "Iron Gate" from the "Great yard next St. James's Park." Most of this yard, together with the adjoining friars' garden, is now included within the grounds of Marlborough House.

WE have before us some particulars of a proposal of M. Ritter to supply the City of Paris with water from Lake Neuchâtel. It is not the first time that a project of this kind has been brought forward. M. Beau de Rochas proposed to provide the French Metropolis from the Lake of Geneva. It is claimed for M. Ritter's scheme that it is more simple and perhaps less costly. Besides having all the advantages of an ordinary supply, these high-level projects intend to give motive power for electric lighting, &c. The surface of Lake Neuchâtel has an area of 350 square kilomètres, and supposing, in consequence of drought, it did not receive a drop of water from the numerous rivulets which spasmodically pour into it, or from any other source, it is estimated that a stratum of one mètre in depth extending over the whole lake would still suffice to supply the city for two years. Such a contingency is not very likely to arise; but it gives some idea of the resources of the lake. It is possible, without appreciably lowering the level of the lake, to give each Parisian 600 litres of water per twenty-four hours. When the population of the city shall have attained as much as five millions, they would still receive about 350 litres per head of good, fresh water. The water would be taken at a depth of 80 mètres from the surface of the lake, at a height of 425 mètres above sea-level, and would run towards Paris at the rate of 30 cubic mètres per second. Immediately on leaving the lake it would pass through a tunnel 35 kilomètres in length, pierced through the Jura, coming out in the valley of the Dessoubre, near Blanchefontaine; thence it would be conveyed in an aqueduct partly underground and partly on hill-sides, to the city. Supposing it arrived in the vicinity of Paris at an altitude of 120 mètres, it would be 305 mètres lower than at the place of intake, and the gradient for the whole route (500 kilomètres) would be 6 in 1,000. The Geneva scheme only provides an inclination of 4 in 1,000. M. Ritter says that his scheme would cost not more than 300 million francs, whilst the Geneva lake project was estimated at 500 million francs. The work could be finished in six years from the commencement. We wish M. Ritter all success, but his project appears to be rather too high-sounding, and,

unless we are mistaken, Parisians will not care to depend for their water on a source so distant, and in a foreign land, especially when the higher ground in their own country could be made to minister to all their wants in this respect—save, perhaps, the motive power alluded to. This latter, however, in view of the easily-obtainable and cheap distribution of hydraulic power from many other sources, may be regarded as a secondary matter.

THE collection of portraits of architects, exhibited in one of the rooms in the École des Beaux-Arts during the time of the Conference of Architects at Paris, was of considerable interest, and included a number of old engraved portraits of the Italian architects of the Renaissance. The French architects of the last generation, many of whom have left reputations which will not soon be forgotten, were also largely represented in the collection. English architects, we observed with certain feelings, were very sparsely represented, the names of Inigo Jones, Sir Charles Barry, and Owen Jones making up the whole English list. We might have hoped to have seen Wren, at any rate, if not Scott and Street. Among other distinguished names whose effigies were to be seem were Alberti, Arnolfo di Lapo, Bernini, Bramante, Delorme, Erwin von Steinbach, Ghiberti, Le Nostre, Le Paultre (given in the old spelling—neither of these were properly architects, however), Mansart, Michelangelo, Palladio, Perrault, Raphael, San Gallo, Sansovino, Scamozzi, Schinkel, Soufflot, Vignola, and Viollet-le-Duc: a series of names rather calculated to fire the mind of the ambitious young architect of the day, seeing what a crowd of associations in connexion with the romance building hangs about them.

AN influential meeting was held in Edinburgh, last week, to consider the question of holding an Electrical, Engineering, and Mechanical Exhibition in that city next year. It is thought that the opening of the Forth Bridge will form an element favourable to the success of such an undertaking. It was remitted to a committee to carry out the Exhibition scheme, and report progress to a future meeting of the General Committee. Negotiations are on foot for the procuring of a site in the immediate proximity of the railways to the west of the city, at Gorgie. Though somewhat distant from the city, the site possesses advantages in respect of the delivery of heavy exhibits directly from the railway. Another advantage it possesses is that of ample space for outdoor exhibits—electrical railways, tramways, and wind and water power necessary to illustrate the different applications of electricity. Another site talked of was one across the Dean Bridge, on the Queensferry-road, which, although it might not have all the advantages above referred to, had others which might probably counterbalance them.

WE have received the first number of the *Decorative Vorbilder*,* a monthly publication of *motifs* for decoration; with an announcement from the English agents for the sale of the book that "should the English press notice this part favourably," they will shortly issue a special edition with the titles printed in English. We fear the publishers are not likely to find in this country the encouragement they hope for. The Germans are probably the worst decorators at present, in regard to perception of what decorative treatment means, of any nation in Europe, and the present work is fully representative in that way. The only page in it that would appear passable in the eyes of English decorative artists would be that of the "Vignetten" of scroll-work in black and white, and we have much better models of this kind of work accessible in England. Of the other designs the less said the better. They may do in Germany.

* Julius Hoffmann: Stuttgart.

ARCHITECTURE AT THE ROYAL ACADEMY.—IX.

1985. "Christ Church Cathedral, Oxford": Mr. Cecil B. Roper. An ink-drawn interior in the same style as No. 1952, on which we before remarked. The peculiar spottiness of handling is, however, a little overdone here.

1987. "New Roman Catholic Church, Folkestone": Mr. Leonard Stokes. This very characteristic exterior of a small church we illustrated in the *Builder* for June 1 of this year. The deeply-splayed and moulded window between the square masses of plain masonry acting as angle features, gives a largeness of effect to what is only a small church. We do not quite like the small pieces of buttress stuck against the lower story of these angle-turrets; they seem to want tying-in to the composition.

1988. "Design for East Window, St. Andrew's Church, Clevedon, Somerset": Mr. C. Hardgrave. A window treated with a large amount of architectural framework of late Gothic type, forming in each division a framework to the figures of Apostles in the principal lights; other figures similarly framed appear in the subordinate lights. Four small spandrels are ingeniously filled in with winged emblems of the Apostles. The style of the glass is later than that of the window tracery, which is of no great consequence however; the treatment of the architectural detail is good and fills up the spaces well, and the figures are designed with a certain degree of stiffness and perpendicular line in the drapery which harmonises them well with the whole: the colouring is rich and effective also.

1989. "Gatehouse at Warnham Court, Horsham": Mr. A. C. Blomfield. A pencil drawing of a pretty gatehouse with a circular-arched entrance between two wings with stepped and curved gables; under each gable a pedimented niche with a statue is picturesquely worked in as a pier between two windows; the weak point of the design is in the lean-to bays on the ground-story, which do not harmonise with the character of the building and look rather commonplace.

1990. "Cottages and Stables, Banstead": Mr. Herbert D. Appleton. A pen drawing of a picturesque group of cottages, of which an illustration will be found in the *Builder* for October 27, 1888.

1991. "The 'Angel Tower,' Canterbury Cathedral": Mr. H. Wilson. Apparently a good sketch, but not easily seen where it is hung. The illusion of upward spreading of the vertical lines of the tower is curiously seen in this drawing, probably owing to the arrangement of the sky and its decidedly-marked oblique lines, and the upper part of the tower being light against the darker portion of the sky.

1994. "An Old House-front at Rouen": Mr. Arnold B. Mitchell. A drawing, reproduced in the *Builder* of Feb. 19, 1887, and a very pretty one, but incorrect, as we discovered afterwards, in showing the middle pier of the first story the same width as the side ones, whereas it is really a good deal narrower; an incident which has a good deal of effect on the character of the front.

1995. "Fotheringay Church": Mr. Raffles Davison: a slight but very agreeable pen-sketch of the well-known tower and lantern.

1996. "Eton College": Mr. R. Phené Spiers; a good architectural water-colour showing a gateway and part of one of the quadrangles.

1997. "Mansion at Rondebosch, Cape Town": Mr. James Brooks. This is an interesting pen-drawing, finished with much care, of a large house, of which a plan is added, in which it seems to have been the object to reproduce in the Cape Town climate and surroundings the main characteristics of an English domestic Gothic house. We should have thought the mullioned windows rather large in area for a hot climate. A certain degree of special character is given by the verandah, carried on turned wooden pillars, which runs round the ground story. The plan seems a very good one, but the house has hardly the degree of character we should have expected from the author and under the suggestive circumstances of the site.

1999, "Hanover New Schools, Gilbert-street, Grosvenor-square": Mr. W. D. Caröe. A rather heavily-worked but not ineffective pen drawing, which seems to be an inspiration from the London Board School style; treated with some character, but rather heavy. The only relief to the general squareness of line is in the canted angles of the upper stories of the wing on the right of the drawing, and the plan in the corner, of ground floor only, shows nothing to account for this treatment at this point.

2000. "Design for East Window, St. Leonard's Church, Tortworth, Gloucestershire": Mr. C. Hardgrave. This, by the same artist as 1988, is also a very well-designed window in point of style and colour, showing a true feeling for the proper characteristics of stained-glass design; rich colouring, perfectly flat treatment of the composition, and good decorative effect in the accessories.

2003. "Proposed Convalescent Home for Ladies, Bognor, Sussex": Mr. Hilton Nash. This is too high to see the small plan added in the corner. The coloured geometrical elevation shows a picturesque combination of red brick and timber and plaster work, perhaps with a little too much appearance of striving after the picturesque.

2005. "A House at Sudbury": Mr. James S. Gibson. A pleasing example of a quiet picturesque country house of the "cottage" type, in which the most important features are elliptical bay windows (elliptical on plan) running the whole height of the wall and acting as apparent supports to widely-projecting eaves, after a manner much practised now from old examples, but which has a picturesque charm of which one does not easily tire.

2006. "Stables at Otford, Kent": Messrs. Roger Smith and Gale. This is a very good, clear, bright pen drawing, showing a group of stable buildings with the centre portion treated as an architectural design of some importance, with black-and-white work and a kind of open loggia in part of the ground story. The meaning of this, however, and the function of the small one-story buildings on each side, is not apparent in the absence of a plan. These lower buildings, at all events from the point of view taken in the drawing, rather interfere with the effect of the whole.

2007. "Compartment of Vaulted Ceiling, Appartamenti Borgia, Vatican: painted by Pinturrechio": Mr. Gerald C. Horsley. "What is the good of copying that?" we heard a spectator ask. Well, the good is that a remarkable piece of decorative work is brought to the knowledge of people who have not been to see it, and perhaps cannot conveniently go; and it is interesting as a remarkably able piece of copying; and possibly the artist found it very good practice for himself. So there are three good reasons for the carping spectator. The drawing shows broad flat radiating vaulting ribs treated with an interlaced gilt ornament curiously Celtic-looking in character; the interspaces deep blue with a diaper pattern in thin gold lines; in the centre of the compartment is a built-up quasi-Classic throne or shrine with a crowned figure seated on it, and another standing on a head placed on the apex of the gable; the whole might have come out of the "Porphyrio" volume, or some such work. The figures on each side are inexplicable; on one side are two youths reaching to pluck apples from a tree of which the leaves show a faint green against blue ground; on the other side is a reverend-looking gowned figure with two similar youths; on the shrine in the centre are the words

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in a panel. The whole is a curious piece of what may be called Renaissance mysticism.

2008. "Portion of Mosaic of King Roger Crowned by Christ, La Martorana, Palermo": same artist. A large very careful copy of a stiff mosaic crowned and draped figure, painted with the gold as well as the colours realistically imitated, and every cube of the mosaic shown, but whether professing to be an exact reproduction of the original in respect of jointing also we cannot say.

2009. Compartment of Ceiling, same title as 2007, and same artist. This is of much less interest than 2007, nor would any one for a moment suspect, from internal evidence, that it was painted by the same artist or belonged to the same date. It shows a triangular panel with a circular medallion in the centre with a half-length figure of Solomon painted in it, there are three subordinate triangular panels with flower ornaments on a gold ground, and the surface between is painted with animals and garlands and tripods in what may be called the *thin* Renaissance ornament style, in gold on a very dark blue ground. We presume Mr. Horsley has satisfied himself that these two are really by the same painter; the more we look at them, the more impossible it

seems. Visitors to the Academy have to thank him, at all events, for three very interesting and careful illustrative drawings.

2010. "Halifax Cathedral, Nova Scotia"; Mr. Arthur E. Street. These were published in the *Builder* for May 18 of this year. The exhibit consists of a sheet of plans and geometrical elevations simply. The plan shows a three-aisled church with a shallow square-ended chancel with vestries beyond it, kept of course low, and a triplet lancet window over. On the south side of the nave is a rather peculiarly arranged morning chapel cutting out part of the south aisle, and with an east window on one side of its central axis with a borrowed light from the aisle on plan; the west elevation, however, shows that it has large central windows in the gable above. The western apse in the chapel, which makes a pretty feature externally, is, we presume, intended as a baptistery. The church is designed in an exceedingly solid and simple Early English style, with geometrical tracery of a simple type introduced here and there; the nave and aisles are timber-roofed, the chancel vaulted. The longitudinal section shows a good effect obtained by the plain mass of solid wall of the morning chapel, with the south arcade abutting against the end of it. The whole is a very satisfactory example of the style of the mother country transferred to a colony.

2011. "Upholland Church, near Wigan"; Mr. Basil Champneys. This we illustrated in the *Builder* for December 15 of last year. It is a view of the east end of a church with a richly-treated traceried window of Late Decorated style, and advantage is taken of the fall of the ground to get a vestry beneath the chancel, which is entered by two square-headed doors in the east end, the plinth upper moulding stepped a little way up to form a label for them and for the square-headed window between which lights the vestry. This is ingenious and characteristic: we do not quite like the two small buttresses under the east window, cut off short below the string-course; they look planted on; they would have been better carried up to the window sill and finished with gablet heads. Plans of the chancel above and below are shown.

2012. "Burford Church, Tenbury; Chancel as restored"; Mr. Aston Webb. A pencil drawing, hastily executed in some parts, but very effectively touched in the portions which it was specially designed to show. A small sketch in the corner shows the chancel as it was, with a thinly-framed gimcrack open timber roof with very low collar-beams and ceiled at the true collar-beam level. For this has been substituted a semicircular waggon-ceiling richly decorated with foliated panelling, and with figures of angels over the piers at the springing, gracefully following the curve of the roof. The windows have been filled with good tracery, and an effectively-designed reredos put beneath the east window, while a neglected monument with a recumbent figure has been brought out to the centre of the chancel. A comparison of the work done with the previous state of the chancel shows a very satisfactory piece of restoration, which has resulted in giving richness and beauty to a formerly bare and mean chancel.

Here we conclude our notes on the architectural drawings of this year's Academy, which exhibit a great variety of work, though not including more than a very few drawings which can be considered of the highest order of interest.

The Hellenic Society.—The annual meeting of the Society for the Promotion of Hellenic Studies was held on Monday afternoon. Professor Jebb presided, and among those present there were Mr. Watkiss Lloyd, Dr. Hubert Holden, Mr. J. B. Martin, Mr. Walter Leaf, Professor Ridgeway, Mr. Talfourd Ely, Mr. J. T. Bent, Professor Butcher, Professor Baldwin Brown, Mr. George A. Macmillan, the hon. secretary, &c. Mr. Macmillan read the tenth annual report, and the Chairman, in giving a survey of Hellenic studies during the past year, referred to the most recent discoveries and researches in the field of Greek archæology, particulars of which have appeared in our columns from time to time. Mr. A. E. Gardner, the Director of the British School at Athens, then gave an interesting account of archæological work in Greece during the past season. The report was approved, and officers having been elected, votes of thanks to the auditors and the chairman were passed, and the meeting terminated.

THE INTERNATIONAL CONGRESS OF ARCHITECTS.

THE third International Congress of Architects was opened in Paris on Monday, the 17th inst., in the Conference Hall of the Trocadéro Palace, the two previous ones having been held in connexion with the two last International Exhibitions in Paris,—that of 1867 on the Champ de Mars, and that of 1878 at the Trocadéro, when this palace was added, and became a permanent centre for various movements in connexion with Architecture and the Fine Arts in France. In preparation for the event the Central Society of French Architects took the initiative at an early period, as they had done at the two previous Exhibitions, and a strong committee was formed, of which M. Bailly (Member of the Institute of France) became President, and the following, among other leading French architects, members:—MM. Charles Garnier, Hermant, de Joly, Wallon, Ch. Lucas, Hardy, de Baudot, Paul Sédille, &c. This committee invited and received the co-operation of the Presidents of the chief architectural and artistic societies in France, England, Germany, the United States, and several other countries, the British representatives including Sir Richard Wallace, Sir F. Leighton, Mr. Waterhouse, R.A., Professor Aitchison, Mr. Penrose, Mr. R. P. Spiers, Mr. Appleton, Mr. H. H. Statham, Mr. C. Barry, Mr. C. Purdon Clarke, Mr. W. H. White, &c. Several Governments were represented by delegates officially appointed.

The opening proceedings, which took place in the afternoon of Monday, consisted of the appointment by the Congress of its officers, M. Bailly (President of the Central Society) being appointed President, and M. Charles Garnier Vice-President, by acclamation. The following gentlemen were added to the list of Vice-Presidents:—For France, MM. Daumet, Normand, Hermant, Guillaume; for England, R. Phéné Spiers, H. D. Appleton; United States, R. Morris Hunt; Germany, Leniman; and Portugal, Da Silva. MM. Charles Lucas and Eugène Müntz, secretaries of the Committee of Organisation, were made the secretaries of the Congress, with the addition of MM. Bartaumieux, Loviot, Roux, and Gaston Trélat, and for Germany, M. Bendemann.

The President having welcomed the members, French and foreign, for their ready and hearty co-operation in the work, and declared the third Congress open, M. Charles Lucas gave a report of the proceedings of the committee of organisation during the eleven months of its existence, the steps taken to convoke the most representative gathering that was possible, of both French and foreign members, to prepare a preliminary programme, and to organise an exhibition of portraits of architects at the Ecole des Beaux-Arts. He regretted that the attempts which had been made to procure from the railway companies a reduction of fares in favour of the members of the Congresses to be held during the Exhibition had so far been unsuccessful, and that the members of that Congress had therefore not had the advantage of the expected reduction. Including twenty-five foreign adherents and twenty foreign societies, the Congress had received the support of 247 members and subscribers, and a sum of 10,600*l.* had been furnished towards the expenses of the Congress. The modifications made in the programme by the absence of M. Gustave Eiffel, who was expected to give the first lecture, and certain circumstances which necessitated the change of date of the banquet from the 22nd to the 21st, and prevented the projected excursion to the palace of Chantilly, were described, and references were made to the absence of several members who had intended to be present at the Congress, included among these being their eminent English colleague, Mr. Penrose, whose absence was unfortunately due to illness. The modified programme of the sittings and visits was explained, and the speakers who would read papers, so far as they had been fixed, were named.

The report was adopted, *nem. con.*

The first subject to be treated was "The teaching of Architecture in France and Abroad—its present situation, and the reforms to be introduced into it," and at the close of the formal business of the Congress, Monsieur de Baudot was called upon to deliver a lecture on the subject. M. de Baudot's paper, which was listened to throughout with great interest, and was warmly applauded at its close, commenced by declaring his conviction that he was undertaking a delicate, and perhaps painful, task in putting forward views which were contrary to those of a great number of his colleagues. He was not the first to commence the combat which had been going on with more or less vigour for the past fifty years. The contribution to the discussion he proposed to give was not intended to be regarded as a solution of the questions in dispute, but was presented for the purpose of provoking discussion.

The first point to be decided was whether reform was wanted or not, and he welcomed the presence of so many foreign members in the Congress, because their co-operation in the solution of the question would be of the highest value. He contended that modern architecture had no æsthetic character of its own, and that the discovery of a new art in architecture had become necessary on account of the rapid march of modern science. The scientific character which the modern curriculum had assumed necessitated extensive changes in the teaching programme. A Greek original, or an example of the architecture of the French middle age, no longer sufficed for a model. They did not respond to modern utilitarian ideas. To present for imitation the style of Louis XV. was irrational, and to-day a rectification of the programme of studies was a necessity. During forty years the National Institution had done excellent work, and its system was far superior to the system which preceded it, but it was no longer sufficient. New efforts must be made. The artistic in architecture was too much divorced from the scientific. Present methods tended to produce, in the second place a scientific work, and in the first place only a water-colour drawing. While they continued in this direction the architect ran a great risk of being outstripped by the engineer. The importance of the engineer was rising, that of the architect falling in estimation. A change of method was imperative in the interest of the architect himself, in order to safeguard his position and to maintain the dignity of the profession.

The admirable Exhibition they had created on the Champ de Mars was the best possible illustration of the tendency of our age to magnify the importance of the engineer. The buildings presented many points for consideration which came within the domain of art, but it was not art. Almost everywhere they found skeletons created by the engineer and decorated by the architect, who was thus reduced to play the rôle of a co-operator in the work, in place of being the creator and director. The architect believed too much in the ornamentation of past epochs, and did not sufficiently consider the question of a form of ornamentation which should be the logical outcome of the improvements of the age, and should be based on the rational employment of the materials that now existed. The young architect appeared to have no belief in the possibility of evolving a new contemporary architecture. That was because his education was defective and his instruction was insufficient.

He attributed the fault to the present mode of teaching architecture under academical direction in the Ecole des Beaux-Arts. In it science was taught independently of art. In the examinations, account was not taken of excellence in idea of construction. Only good drawing was rewarded, and studies of a scientific nature based upon scientific and philosophical considerations remained unregarded. The philosophical side of art was neglected, and the social, economic, and administrative conditions which the young architect was called upon to satisfy were not sufficiently considered in the present curriculum. The student was, in short, only taught to become an artist, and was not encouraged to become an adept in the art of composition. Only the forms of antiquity were placed before the student; the study of the models of the Middle Ages were either neglected or were considered by epochs without comparison between epoch and epoch,—in short, no analysis was encouraged or exacted.

In concluding his paper, the lecturer declared that an architect should know everything, and he indicated generally the nature of the improvements which he considered necessary in the programme of studies for architectural students. He demanded a superior school, in which the object should be the transformation of the art rather than the formation of artists. Such a school should not give a monopoly of training to students in Paris, but should be extended to the provinces. He claimed, in fact, that the principle of decentralisation should be

applied to the teaching of architecture, in favour of the provinces, where it had been hitherto impossible to obtain suitable special instruction. He demanded that the scientific and the artistic sides of the art should be studied simultaneously; that a logical programme should be laid down, that students should be compelled to study composition, and give proofs of knowledge of this branch of the art from time to time in each stage. M. de Baudot demanded, finally, a logical study of the entire past, in order that the modern architect might be imbued at once with the spirit of grace from the architecture of Greece, grandeur from that of Rome, and ingenuity of combination from that of the Middle Ages. There should be an increase in the number of professors, and at the same time a diminution in the number of subjects of examination, the examinations themselves being more than under the existing system directed to the application of the knowledge acquired. The following propositions were, in conclusion, formulated by the lecturer:—

1. To introduce reforms in the teaching of architecture.

2. To limit the number of students at the National School of Art (École des Beaux-Arts) to those who showed the highest proficiency.

3. To encourage schools of a preparatory character (*de second ordre*) in Paris and the departments.

4. To base the examinations in architectural composition upon scientific knowledge and upon a logical study of the programmes.

5. To develop a knowledge of various styles, those of antiquity as well as those of the Middle Ages.

A discussion arose, in which Mons. Émile Trélat and other members took part, upon the order of discussion of the points arising out of the paper, which was described by the last-named authority as "a very seriously-composed study." M. Ch. Garnier pointed out that as several speakers would claim the right to support or oppose the proposition, it would be difficult to properly consider the important propositions with which the paper concluded before the end of the proceedings. After some discussion it was decided to take a vote upon the conclusions proposed by M. de Baudot at the Thursday's sitting of the Congress.

The first sitting then closed, the members being invited afterwards to inspect the scaffolding put up for the purpose of repairing the roof of the grand Festival Hall of the Trocadéro by Moms. Bourdais, the architect of the Trocadéro Palace.

The second sitting of the Congress, which commenced at 3 p.m. on Tuesday, the 18th, in the Hemicycle of the École des Beaux-Arts, after a collective visit by the members to the exhibition of portraits of architects hung in one of the salons, was presided over by Monsieur Charles Garnier. Papers were presented on the question of a "Compulsory Diploma for Architects," by MM. Chevallier and Courot.

M. Chevallier's paper, which was read by M. Jourdan, in the unavoidable absence of the author, commenced by declaring that the necessity of possessing special educational acquirements before exercising the profession of architect was a primary truth. Leaving the question of the programme of studies to be settled by the experts, the author of the paper accepted that of the École des Beaux-Arts of Paris as sound. It had hitherto been optional to follow the course of study prescribed or not, and, consequently, by the side of competent architects men were found having little or no professional education, who profaned the art, lowered the dignity of the profession, constructed badly, and mis-employed the money of their clients. The diploma, which he regarded as an absolute necessity, to have any real value should only be conferred by the national authority, *i.e.*, the Government. The compulsory diploma might be made immediately available by means of a law similar to that which controlled the practice of medicine. The proposed diploma would not be retrospective.

In order that such a project should have a chance of successfully passing the ordeal of Parliamentary discussion, it must have the sanction and support of the masters of the profession. But since, at the headquarters of the art, the jealous guardian of the dignity of the profession must do nothing in undue haste, it is, above all, necessary for the great body of architects to prove that the project under their patronage will satisfy a real want, prove profitable to the art and those who practise it, as well as to the public.

The lecturer passed in review the different objections offered by opponents, and replied to them. It was objected that since conceptions could not be measured, no examination was possible, and, therefore, no diploma possible in an affair so completely one of imagination as architecture. His reply was that, since the examination existed at the École des Beaux-Arts, the diploma was at least experimentally possible.

The objection that a diploma would stereotype the teaching and destroy individuality in pupils was met by the fact that the victors in the competition for the "Grand Prix de Rome" had never lost their individuality in spite of the homogeneity of their studies. Those architects who had already succeeded without diploma naturally considered it unnecessary, and there were always to be found persons who opposed all reforms, believing that everything was for the best in the best of all possible worlds. To such objectors it was difficult to reply seriously, but to those who feared that between the old conditions and the new somebody would suffer, it might be replied that the compulsory diploma could not possibly weaken the position of architects in practice, but that, on the contrary, it would strengthen it, because, instead of the unlimited number of persons who may assume the position of architect, if they choose, under the present lax *régime*, the admission would be limited not to those who fancied the position, but to that much smaller number of persons who from among these had proved by their acquirements that they merited the position. It would appear that all who had, under actual conditions, conquered a position by their merits (and none more than the holders of the "Prix de Rome," who must always sail over the heads of the ordinary certificated architect), should be glad to have as colleagues men whom they could take by the hand and esteem as architects who, by proved capacity, had made themselves worthy to bear the title.

The conclusion of the paper declared necessary the compulsory certificate or diploma for architects for the following, among other reasons:—That the free exercise of the profession of architect in France has degenerated into licence; that persons unworthy of the title of architect are prostituting the art, compromising the dignity of the profession; even endangering the lives of the public, and that they are consequently an element of danger. Since the fact of a certificate becoming compulsory would infallibly lead to the constitution of bodies of architects where each member would possess at least the minimum of architectural knowledge; such bodies and the members belonging to them would afford the public guarantees of competency, which the title of architect, too often usurped under existing rules, does not afford. For these reasons the International Congress was called upon to affirm the following resolutions, which had already received the sanction of three previous national congresses, namely, those of Nice, Hyères, and Toulouse:—

1. "That, from a date to be fixed as early as possible, no person in France shall be allowed to exercise the profession of architect if he is not provided with a diploma, delivered by the Government, certifying to his possession of the minimum of knowledge necessary to the profession of architect."

2. "That the position of existing architects, at the time when the compulsory diploma may come into force, shall be completely respected."

After a few observations on the same subject from another member, it was resolved to vote upon the two propositions submitted at the proper time, towards the close of the Congress.

A paper was then given by M. Paul Gout on the subject of the proposals for a reform in the methods of teaching architecture. The speaker warmly espoused the views of M. de Baudot, which he developed effectively and skilfully. He joined in the condemnation of the methods of instruction followed at the École des Beaux-Arts, and declared that he knew of no better method of instruction than that adopted at the Trocadéro, in the classes conducted by M. de Baudot.

The President, M. Ch. Garnier, warmly thanked the speaker for his interesting communication, and invited him to formulate his conclusions, in order that they might be submitted to the vote at the sitting of the Congress on Thursday. The conclusions were the following:—

1. It is desirable to modify the basis, and, therefore, the development, of the methods of teaching architecture, which is at present limited to the application of conventional forms and to the technicalities of construction.

2. For the existing mode of teaching, there should be substituted a system opening out a vaster field to the independence of the artistic genius of the nation, the proposed system consisting of the organisation, at the École des Beaux-Arts itself, of didactic instruction based on the analytic study of the methods of composition upon which the varied manifestations of the architectural art through every epoch have proceeded.

M. Ch. Lucas, the secretary, having explained the order of proceedings for the remaining sittings of the Congress and the dates of the proposed visits to the Grand Staircase of the Louvre, under the conduct of M. E. Guillaume, to the new Sorbonne, and the new Lycée Molière at Passy, an album of designs of Norwegian dwellings, formed of wood, and detachable in pieces convenient for exportation, was described and laid on the table for inspection by the members of the Congress. The album, which was presented to the Congress by MM. Tanz & Co., of Trondjhem, Norway, was examined by several members. The proceedings were then adjourned for the visit to the Louvre.

The morning sitting of the third day of the Congress, which commenced at 9 a.m., in one of the minor halls at the École des Beaux-Arts, was again presided over by M. Charles Garnier. There were on the daïs, in addition to the secretaries and several French vice-presidents:—Mr. R. Phéné Spiers (Member of Council, R.Inst.B.A.), representing the Art School of the Royal Academy; Mr. H. D. Appleton (Pres. Architect. Association, London), and M. E. Guillaume (Professor of Architecture at the École des Beaux-Arts), the latter attending for the purpose of replying to the criticisms offered by M. de Baudot and M. Paul Gout, on the question of a reform in the methods of teaching architecture.

M. Lucas having submitted the minutes of the preceding sitting, announced the arrival of Mr. W. H. White (Secretary of the Royal Institute of British Architects) to represent the Royal Institute at the Congress, and the expected arrival, on the following day, of the President of the Royal Institute, Mr. Waterhouse, R.A.

M. Guillaume claimed to have a title to reply to the attack which had been made upon the system of instruction pursued at the École des Beaux-Arts, on the ground of his twenty-six years' connexion with it, as student, and subsequently as professor, of architecture. He described the course of instruction adopted, and the tests demanded from students in the various stages, explaining some of the changes and improvements introduced during the past twenty-five years, and appealed to the President (M. Ch. Garnier), a victor in the Grand Prix de Rome, and to the three architects charged with the grandest constructions of the Exhibition, who had all been pupils at the École des Beaux-Arts, as proofs of the efficient character of the instruction given (cheers). The basis of the instruction was laid in accordance with the principles of the exhaustive programme laid down by Vitruvius, which, if followed out faithfully, would produce architects worthy of being esteemed masters in every faculty. According to this, the architect must be an adept in geometry, and in arithmetical, mathematical, and astronomical science; have a good knowledge of music, and of the art of healing,* and be a master of rhetoric and languages, of history and of philosophy, as well as an artist and a master of construction, to be a perfect architect (great applause). These fundamental principles had been applied to the elaboration of programmes which varied with the varying exigencies of the times. The list of subjects for study and examination which was given, he maintained, was appropriate to the necessities imposed by modern conditions, the architecture of all periods, that of Louis XIV. equally with that of the age of Augustus and of Pericles, being taught to the students. They were taught simultaneously the arts of architecture, painting, and sculpture as well as

* Perhaps Vitruvius's real meaning would be better expressed to modern ears by substituting the word "sanitation."—ED.

literature, chemistry, physics, and the laws relating to buildings. In short, the course of instruction might not be perfect, but it was entirely unjust to say that it did not progress with the progress of contemporary art and science. The opposite was the fact. The progress in the École des Beaux-Arts had been incessant (cheers). Every epoch had its own characteristics. The constructions of 1789 differed totally from those of 1830, and the latter period had but little in common with our own time. Their dear friend, the Chairman (M. Ch. Garnier), and many others who had created some of the finest monuments existing in France, had been students of the École des Beaux-Arts. He had given them the Nouvel Opéra, but he would not pretend that he had founded a new style, although it afforded lessons to all who would study it, and he himself had gained much valuable instruction from it. In proof that the École des Beaux-Arts had at all periods given instruction of a kind to foster and not kill originality, he would invoke the names of Blouet, Gilbert, Duc, Abadie, Baltard, Félix Thomas, and Davioud, to speak only of the dead (applause). It had been claimed that they should aim at creating a new art. That was a thing which could not be done by one man, or any one set of men. A new style was the outcome of circumstances working through many generations. What they had to do was to give an instruction based on sound general principles, leaving it to the accumulation of individual and collective genius to apply it to the solution of the problems of each successive age as they arose (cheers). The only change he would propose in the programme was the substitution of the subject of Hygiène, as applied to habitations, for that of Descriptive Geometry. The lecturer was greeted with loud applause at the close of his address.

The President, after some remarks from M. de Baudot protesting against the personal tone which had been imported into the discussion, said the question was one of principle, and ought to be placed on a basis absolutely impersonal.

A discussion then arose upon the question of the day and hour to be fixed for the vote upon the conclusion of M. de Baudot's paper, the President and M. Charles Lucas, the secretary, contending for the maintenance of the order of the day as printed, and M. Guillaume and M. de Baudot endeavouring to obtain the most favourable time for their own supporters for the vote. Eventually Wednesday afternoon, at four, was fixed upon for voting on the subject, and the proceedings were adjourned for luncheon.

We will give further notes of the Congress next week.

Glasgow Architectural Association.—On Saturday last, the second joint-visit this season of the Glasgow Architectural Association and the Edinburgh Association was made to several places of architectural interest. Dalzell House was first visited, Mr. Hardie, Lord Hamilton's factor, conducting the party. Portions of this building date as early as the fourteenth century, while additions have been made so recently as 1867. In the gardens are some interesting sun-dials, and within much excellent woodwork and a valuable collection of armour, chiefly Scottish. The party then walked over to Hamilton Palace, and were shown over the state apartments, the mausoleum in turn being visited, Mr. Gildard, past hon. president, as an apprentice of Mr. Hamilton, office architect of the Palace, giving some interesting recollections of its designing and construction. The company then passed on to Bothwell, and there visited the Old Church, Dr. Pagan kindly meeting the members, and having read a short notice, conducted them over and around the building, and pointed out some of the gravestones of interest. A vote of thanks to Dr. Pagan closed the day's proceedings, which were favoured by fine weather.

Competitions: St. Jude's Church, Southwark.—The Vicar of St. Jude's, Southwark, having recently determined to rebuild his church, a Building Committee was formed, and competitive designs were invited from a limited number of architects. On the advice of Mr. Aston Webb, who acted as the professional referee, the first premium was awarded to the design submitted jointly by Messrs. W. J. H. Leverton and Robert Mortimer, of 6, Delahay-street, S.W.; and the second to that submitted by Mr. A. R. G. Fenning, of 46, Lincoln's Inn-fields, W.C.

THE INSTITUTE OF BUILDERS:

VISIT OF AMERICAN BUILDERS.

MR. JOHN S. STEPHENS, ex-President of the National Association of Builders of the United States, and Mr. George Watson, of Philadelphia, were entertained at dinner by the Council of the Institute of Builders, at the Café Royal, on Wednesday evening last. The chair was taken by Mr. Stanley G. Bird, in the unavoidable absence of the President, Mr. Frank May. After the usual loyal toasts,

The Chairman proposed the toast of "The National Association of Builders of the United States," in reply to which

Mr. John S. Stephens said:—Mr. Chairman and Gentlemen,—It affords us much pleasure to greet you on this pleasant occasion, and I desire to thank you in the name of the National Associate of Builders of the United States, which I have the honour to represent, for this distinguished mark of your courtesy. While we are the fortunate individuals who have enjoyed this social occasion, we are not vain enough to take to ourselves any special merit, but ascribe it to your desire to honour the brotherhood we so humbly represent. In our infant country, as it is compared with your own,—for we have only lived about one hundred years, while you date back many centuries,—it could not be expected that we could have the massive and enduring buildings that we see here at every turn. Of necessity we were compelled to make our buildings of a temporary character compared with yours, both from a lack of means and a want of knowledge of what the future would require. But, gentlemen, that time has passed. Our Government, which by many was looked upon as an experiment, has proved a grand success, and after a hundred years of trial shows that it "came to stay," and we as builders are now erecting our eight, ten, and twelve-story buildings of as substantial a character, of as ornamental a design, of as indestructible material, as any you have here. We, as you are aware, are a peculiar people,—whatever we undertake to do is done on an immense scale; and now that we have commenced to build large buildings I hardly know where we will stop. One of our architects has prepared plans for a building twenty-six stories high, and of a proportionate size on the ground-plan. I hardly suppose we can suggest anything novel to you in the building line; still, I might say that in our very lofty buildings we use, largely, iron construction. Columns resting on immense foundations, laid securely in cement, support iron girders, which in turn support the iron floor-beams, thus becoming an iron tower, self-supporting, while the walls are but as veneering—to enclose it. It is not unfrequently the case that we have the iron structure up six stories high, while the mason work is only two stories high. I must not trespass too much on your patience, but I do want to say a word or two about our Builders' Exchanges in America. They are, comparatively speaking, a new departure, but they have grown and spread wonderfully. If it does not tire you, I might give you a brief history of our local Exchange established only a little over two years ago in Philadelphia. First, the working men, having learned the lesson that in "union there is strength," organised societies and labour unions which, under wise or unwise rules, attempted to regulate the hours of labour, rate of wages to be paid, &c.; and by strikes, boycotts, and like means, enforced their demands. This could only be met by organisation among the employers. Secondly, our mutual friends the architects became more and more overbearing in their demands and contracts, and did less and less of the work that was required of them in the preparation of plans and specifications. Thirdly, the building mechanic did not realise his own importance in the community, and excepting a few individual cases, did not receive the consideration that his talents and ability demanded at the hands of either the architect or the owner. A few gentlemen met together to consider the situation, and the result was the organisation of the Exchange. Upon comparing notes and examining the statistics we learned that in Philadelphia alone we erected yearly from eight to ten thousand buildings, and handled from 30,000,000 to 50,000,000 dollars annually. The aggregate of the business compared favourably with that of many of our associations of merchants, brokers, shippers, and others who were looked up to as an important factor in all that concerned the growth and improvement of our city. These facts being made known among the craft, we constantly received additions to our membership, and now number about 275 of the leading firms in the various branches connected with the erection of buildings. We have bought a large property, and are building a fire-proof office building for the use of members, architects, and others, as well as our meeting or exchange room, an exhibit-room for building materials, and a large room for trade school operations. Our rooms are open from 8 a.m. till 5 p.m. for the use of the members, thoroughly furnished with stationery, daily papers, trade journals, and everything that can be thought of that would be either useful or convenient. From 12.30 to 1.30 noon has been fixed as "change hour," when the members assemble daily for the transaction of business or friendly intercourse. By thus having a specified hour when we can be seen, or when we can see others with whom we are doing business, there is a saving of much valuable time which formerly was wasted in running from office to building in search of each other, either to give or receive necessary instruction. Daily intercourse between parties in the same line of business has done much towards abolishing the petty jealousies that formerly existed. I might go on telling you what has been accomplished, but I am certain it would weary you. I need only say that our National Association, in forming and fostering local Exchanges, is doing a good work, and, in addition, is establishing a more fraternal feeling between them and the architects. Joint committees have been appointed on behalf of the National Associations of Architects and Builders, who have already agreed upon a uniform contract that is meeting with much favour and coming into very general use. We also grapple with such questions as the Lein Law, permanent arbitration rules and conditions for estimating work, the apprenticeship problem, &c. Can you doubt that we are doing a good work for the benefit of the building mechanics of our country? But, gentlemen, I must stop talking,—I confess it is hard to do so when I get on this subject. We have stretched over 3,000 miles across our great country and clasped hands with our brother builders on the shores of the Pacific, and we tender you the same fraternal greeting across the 3,000 miles of the Atlantic ocean. Should any of you favour us with a visit, I assure you that you will find the "latch-string" hanging out, and a warm and fraternal greeting awaiting you on the inside (applause).

Mr. George Watson also replied, giving full details of the working of the technical schools and the Builders' Exchanges in America.

Other speeches followed from Mr. J. Howard Colls, Mr. Chappell, and Mr. Maton.

Mr. Basil P. Ellis proposed the health of the Chairman, and Mr. Stanley G. Bird's response concluded the proceedings.

International Congress of Hygiene and Statistics.—The first meeting of the General Committee, which includes representatives from the Universities of London, Oxford, Cambridge, Glasgow, and Aberdeen; the Royal Colleges of Physicians and of Surgeons of London, Edinburgh, and Ireland; the Sanitary Institute, Society of Medical Officers of Health, British Medical Association, Royal Institute of British Architects, Institution of Mechanical Engineers, Royal Institution of Great Britain, British Association for the Advancement of Science, the Society of Arts, Royal Colonial Institute, and many other leading societies, was held in the Parkes Museum last week, Sir Spencer Wells, bart., in the chair. An organising committee was appointed, consisting of Sir Douglas Galton, K.C.B., F.R.S.; Prof. W. H. Corfield, M.A., M.D.; Dr. E. Frankland, Dr. Ernest Hart, Prof. T. Hayter Lewis, Dr. E. D. Mapother, Dr. F. J. Mouat, Dr. Shirley F. Murphy, and Dr. R. Thorne Thorne, with power to add to their number, to organise arrangements for the meeting, which is to take place in London in 1891.

The Water Supply of Tunis.—The new waterworks for the supply of drinking-water to the City of Tunis have just been opened. They consist partly of new reservoirs, and partly of the old aqueduct supplying the City of Carthage with water, which has been restored for a distance of twelve geographical miles.

Illustrations.

ALTAR-PIECE, CHURCH OF SAN BERNARDINO, NEAR SIENA.

THIS is an illustration, from a photograph, of the altar-piece in the Church of San Bernardino, at the Monastery of the Osservanza, near Siena. It represents the coronation of the Virgin Mary with attendant saints, angels, and cherubim, and is in glazed terra-cotta. It is generally attributed to Luca della Robbia, with at all events considerable probability, as it displays strongly the characteristics of his style.

ST. ETHELBURGA'S CHURCH, BISHOPSGATE.

IN carrying out the restoration and additions here proposed, the present clearstory is to be cleared away and rebuilt in the interior with bands of pale yellow alabaster and pale red brick, externally with yellow stock brick, polished red Devonshire marble being used for the jambs and arch of clearstory and new east windows. The new tracery is to be of Portland stone in all cases. The wall on the north side will be covered with mosaic representing, in the frieze, historical subjects connected with the diocese, below various saints; and panelled below with red Devonshire, with divisions of rose-coloured and green Killey Park marble; also from Devonshire, in the lowest portion; all strings are to be of polished Purbeck. The floors are laid with diagonally-placed squares of Aberdeen granite and black Ashford marble. The surbase to screens is of Mexican onyx. The reredos is of gilded oak, with paintings by the old masters copied in Venetian mosaic. The rood-screen is of framed oak, with painted panels, as are all stalls and screens. There would not be any portion of the Mediæval work touched, in regard to the present aspect of the exterior towards the street. The roof also is of framed oak.

H. D. WILKINSON.

The drawing from which the illustration is taken is hung in the Royal Academy Exhibition.

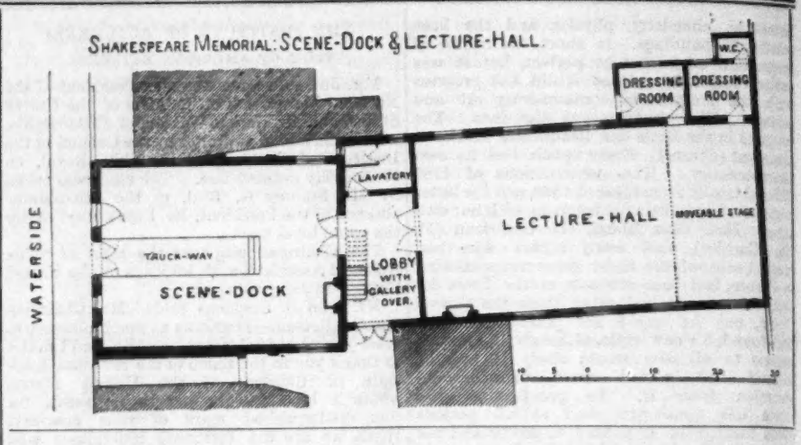
PLYMYARD, BROMBOROUGH, CHESHIRE.

THE plan and elevations given of this house are sufficiently explanatory. The exterior walls are of red sandstone from the Hooton quarries. The upper part of one wing of the house, together with the stables and the lodges, is of half-timber work; oak, as left from the saw, being used. The roofs are covered with red Staffordshire tiles, and the rain-water pipes and heads are of lead. The interior is somewhat elaborately fitted; all the principal rooms have panelling to the lower part of the walls, that to the hall being 9 ft. high. The drawing-room fittings are of rosewood, the library of mahogany, and those of the dining-room, billiard-room, and hall of oak. All the ceilings are richly ribbed and ornamented in plaster. The hall is two storeys high, and has a gallery along one side of it connecting the two sides of the house. The walls of the kitchen, &c., are lined to the ceiling with Dutch tiles. The entrance-gates are of wrought-iron, and were made by Messrs. Barkentin & Krall, of London. Mr. Thomas Haigh, of Liverpool, was the sole contractor. The whole of the work was executed from special designs made by the architects, Messrs. Bell & Roper, of Manchester.

SHAKSPEARE MEMORIAL, STRATFORD-ON-AVON:

SCENE-DOCK AND LECTURE-HALL.

ADDITIONAL space for scenery being needed at the Shakspeare Memorial Theatre, and the site not allowing of an extension of the original structure, the building here illustrated was last year presented by Mr. C. E. Flower, chairman of the Memorial. The front is in Waterside, opposite to the theatre, and the scene-door opens into a paved passage flush with the street, so that scenery can be brought across on a truck and unloaded inside. Behind the scene-dock, and in communication with it, but with separate entrances also, is a hall 53 ft. long by 27 wide, to be used for lectures, concerts, dances, or theatricals, having a movable stage at one end and a gallery at the other. The materials are local red bricks and blue lias stone, with dressings of Campden stone, tarred fir and rough-cast in the gable, and plain red tiles on the roof. The works were carried out by Mr. G. Whateley, of Stratford-on-Avon, at a cost of 757*l.* The architect was Mr. Arthur S. Flower, M.A., of London.



MEMORIAL CROSS TO THE LATE BISHOP OF LINCOLN AND TO MRS. WORDSWORTH.

THIS memorial stands above the graves of the late Bishop of Lincoln and his wife in the churchyard of the parish in which Riseholme House (until lately the episcopal residence of the Bishops of Lincoln) is situated.

The cross with its stepped base is composed of Irish grey limestone, while the large step upon which it stands is of the black variety of the same material, the whole being left unpolished. The total height of the memorial is 8 ft. 4 in., and the breadth across the arm is 2 ft. 4 in.; the stem tapers from 10 in. at the bottom to 7 in. at the top, the latter dimension being the width of the arms.

The nine medallions on each face represent scriptural subjects, those on the obverse—that is, on the side towards the graves—being taken from the life of our Lord; while those on the reverse, or western, side represent the typical subjects from the Old Testament.

The incidents selected for illustration on the obverse are as follows, commencing from the base:—

1. The Annunciation.
2. The Nativity.
3. The Baptism.
4. The Temptation (Our Lord treading the serpent under foot).
5. The Transfiguration.
6. The Crucifixion, occupying the centre of the Cross.
7. The Agony in the Garden, in the left limb.
8. The Entombment, in the right limb.
9. The Resurrection, in the upright limb.

And on the reverse are symbolised:—

1. The Creation of Light. Light being represented as the sun in the form of a mystical face set round with rays, and surrounded by the seven stars; the creating hand of the Deity being shown above.
2. The Creation of Life. Man in the Garden, with typical animals around him: the lion, the ox, the stag, and the pelican.
3. The Temptation and Fall of Man.
4. Noah building the Ark.
5. Moses and the Burning Bush.
6. The Brazen Serpent: in the centre and on the limbs.
7. David and Goliath; behind, the Agony in the Garden.
8. Jonah and the Whale; behind, the Entombment.
9. The Translation of Elijah; behind, the Resurrection, Elijah being represented as caught up to Heaven in a whirlwind of fire.

The circle connecting the arms forms a radiated glory around the central subjects.

The sides of the cross are simply ornamented with interlaced patterns of somewhat intricate design.

The inscriptions on the eastern and western faces are given in the illustration; on the northern and southern sides occur the texts, "Rejoice in the Lord alway, and again I say rejoice," and "Praise the Lord, O my soul, and forget not all His benefits."

The whole of the carving and sculpture were executed by Mr. T. Nicholls, of Wincott-street, Lambeth.

J. A. REEVE.

Walthamstow.—The lowest death-rate ever registered has just been reported in this parish, viz., 8·5 per 1,000 per annum. This parish is reported to be well drained, and its health well cared for, by the Local Board and its officers.

MONUMENTS IN LONDON CHURCHES:

ST. HELEN'S, BISHOPSGATE.

ALL that now remains of the once-important Priory of St. Helen is the church which stands in a small square just off the main thoroughfare of Bishopsgate-street, from which it is approached by a gateway by the side of Crosby Hall. The casual visitor might easily pass close to the church without being aware of it, as no portion of it is visible from any of the leading thoroughfares. The church, from the outside, is in no way remarkable, consisting as it does of a nave and aisle with a small and mean tower erected in the seventeenth century, and yet inside it is, without doubt, one of the most, if not the most, interesting of all the City churches, and one of the few that survived the great Fire. The entrance is not, in the week day, through the small churchyard at the west end of the church, but by a seventeenth century doorway on the south side. The church is irregular in plan, and consists of a nave about 120 ft. long, a north aisle, known as the "Nuns' Choir," separated from it by a series of six pointed arches and pillars, a south transept, and eastward of the transept two small chapels dedicated to the Holy Ghost and the Virgin Mary. The nave and aisle together are a little more than 100 ft. wide, and the extreme width of the church at the east end about 130 ft.

The Priory was suppressed by Henry [illegible] and was of the yearly value of 376*l.* 6s., according to Speed, or 314*l.* 2s. 6d., accord[illegible] Dugdale. The Nuns' Choir was then [illegible] to the parish church, and the rest [illegible] property belonging to the Priory was sold by the King.

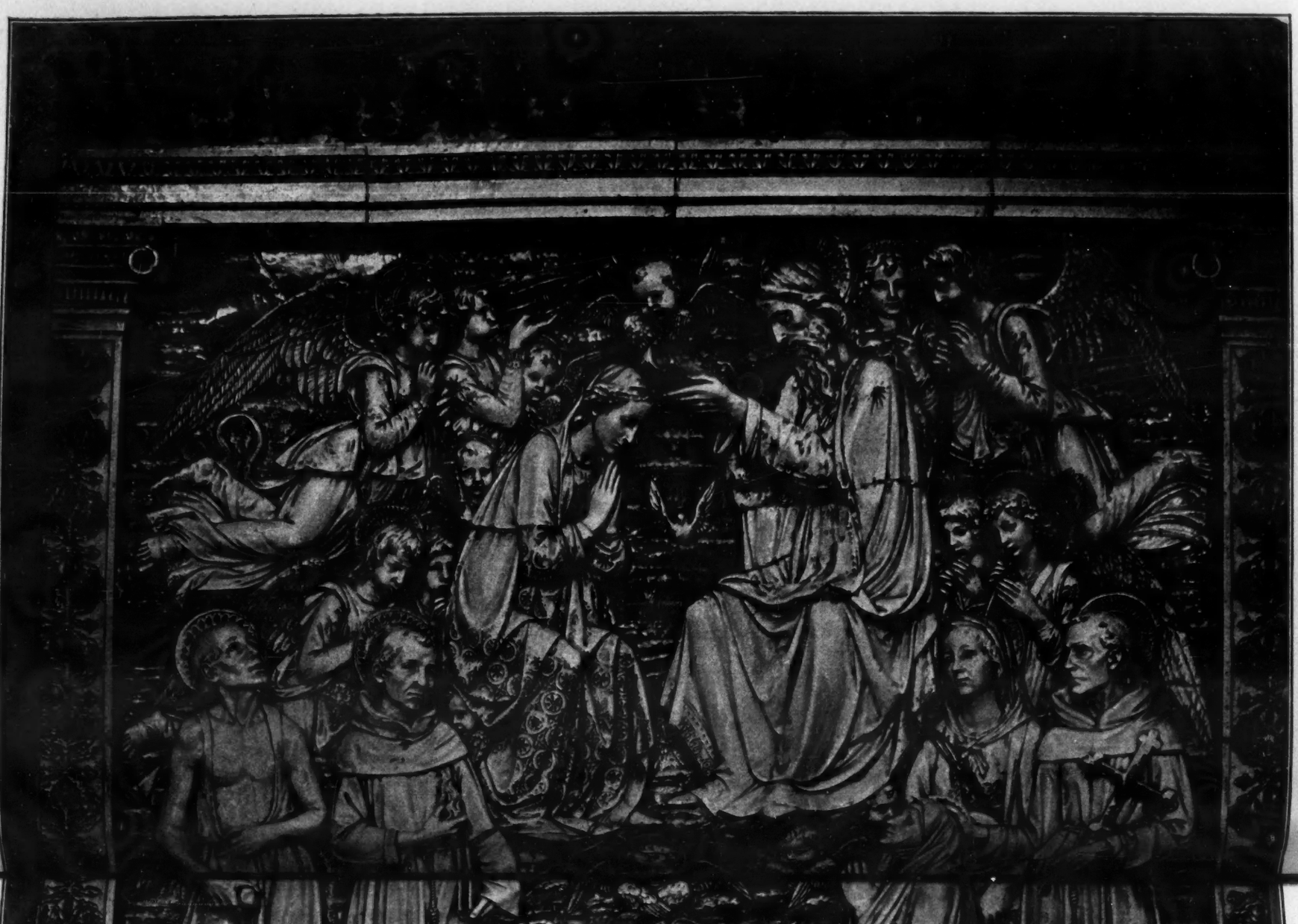
Stow merely mentions that "in this court standeth the faire Church of St. Helen, some time a priory of Blacke nunnes, and in the same a parish Church of St. Helen." He goes on to enumerate the monuments of the dead, but of the forty he gives not more than six are now existing.

Since 1874, when St. Martin's Oteswich, or Outwich, was pulled down, the two parishes have been joined, and the monuments from the former have found a home in St. Helen's Church. Of the monuments mentioned by Stow three only have come down to us, the most interesting being that of Sir John de Oteswich and his wife, a drawing of which is here given. The Church of St. Martin Outwich stood at the corner made by the junction of Threadneedle-street with Bishopsgate-street. The old church, which survived the Fire, was pulled down and rebuilt 1796-7. A view of the old church can be seen in a curious book published in 1797 by Robert Wilkinson, together with many particulars of the church.

The document dissolving the Priory still remains in the Record Office. It bears date Nov. 25, 30 Henry VIII., 1538.

With the exception of the church there is no vestige left of the former conventual buildings, which must have been very extensive. Some slight idea of their magnificence may be gained from a drawing made on the spot in 1799, which shows the place where Bishopsgate-street and its surroundings now are to have been quite open country, with the remains of the Hall and a few crumbling arches.

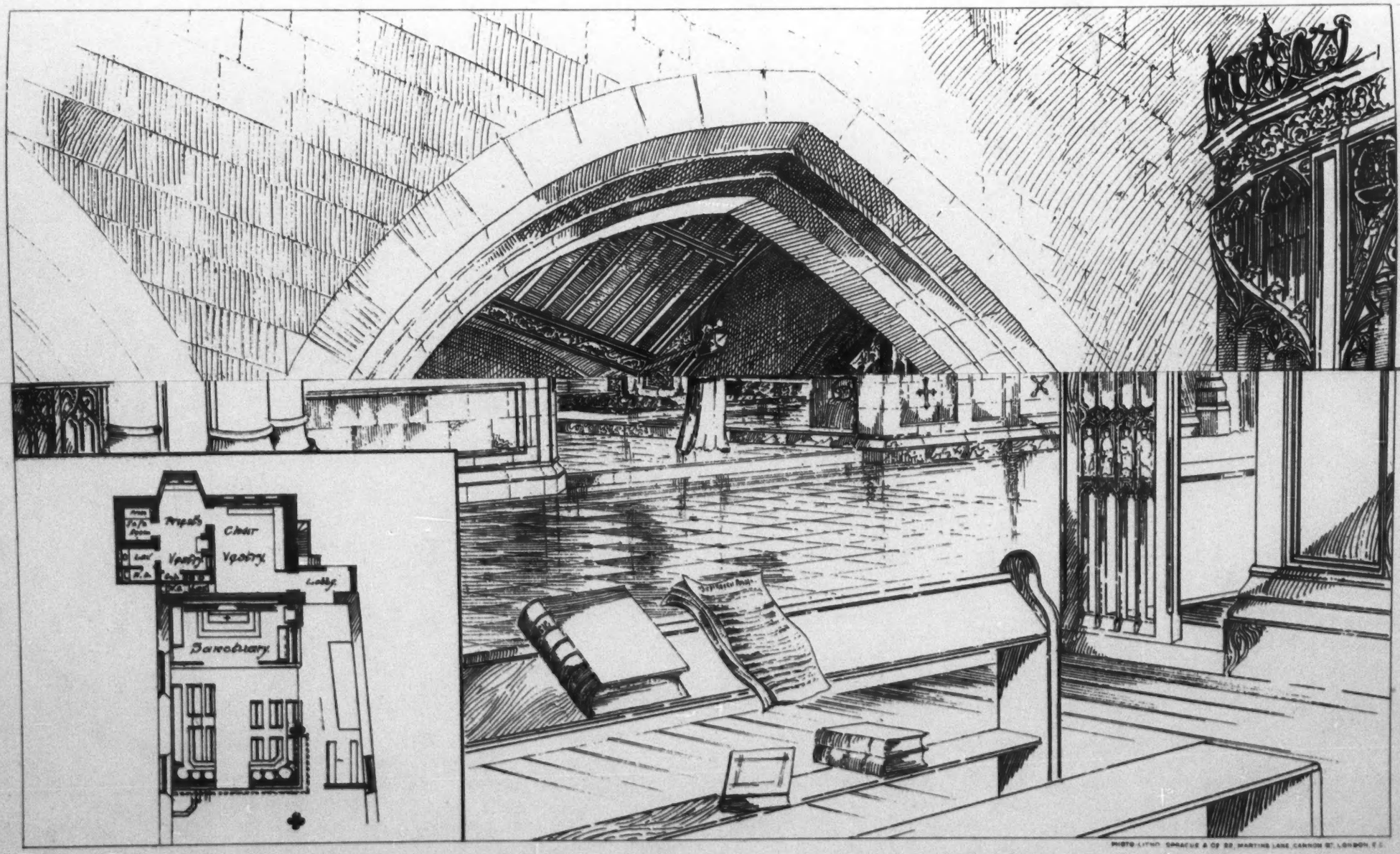
The Nuns' Hall and other houses were, after the Dissolution, purchased by the Leathersellers' Company, who converted the Nuns' Hall into a common hall for the purpose of holding their meetings, and it continued in such use



The Phototype Co., 98, Strand, London.

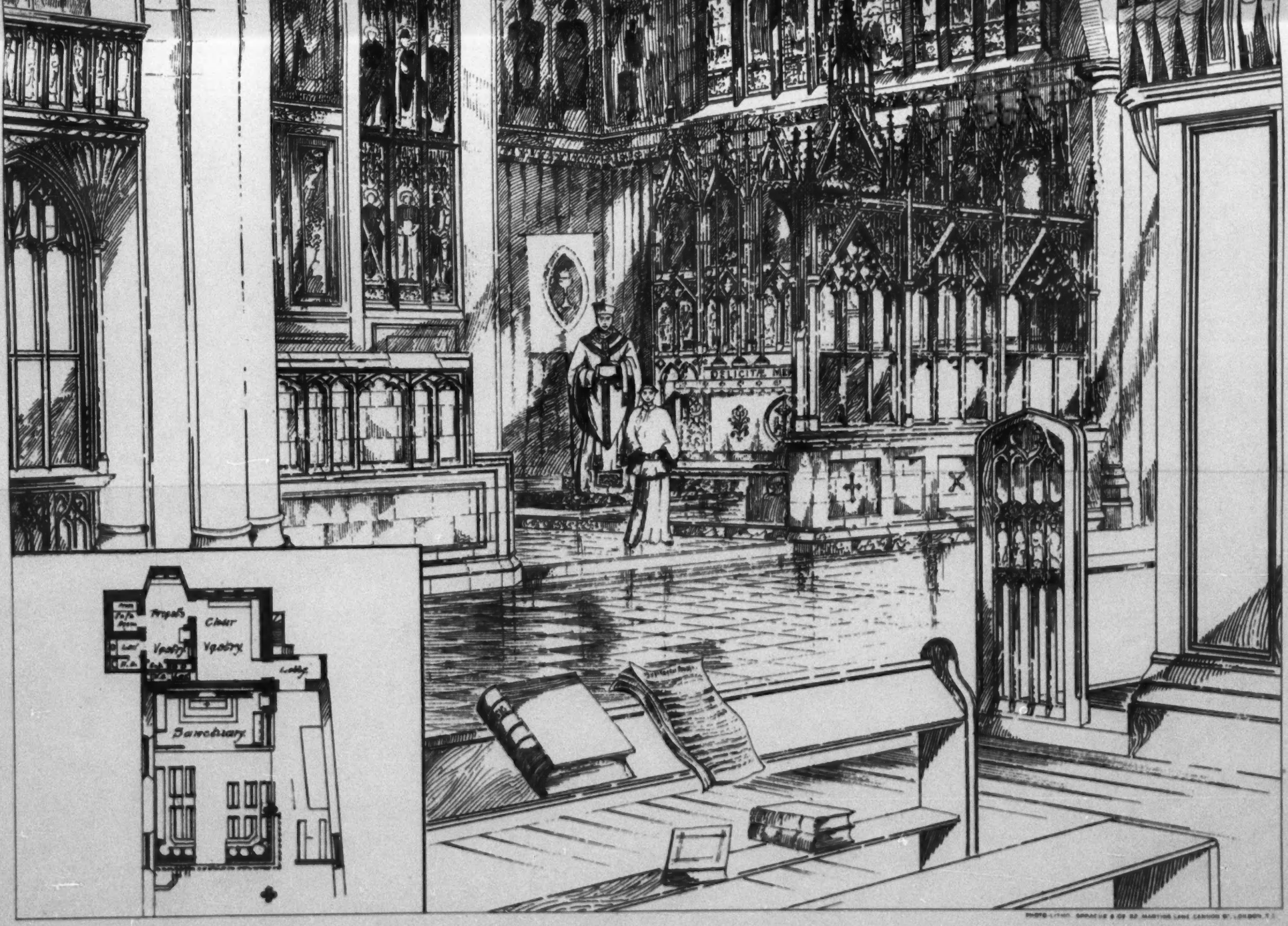
ALTAR-PIECE, CHURCH OF SAN BERNARDINO, NEAR SIENA.

From a Photograph.



CHURCH OF ST. ETHELBURGA, BISHOPSGATE: THE CHANCEL.—Mr. H. D. Wilkinson, Architect.

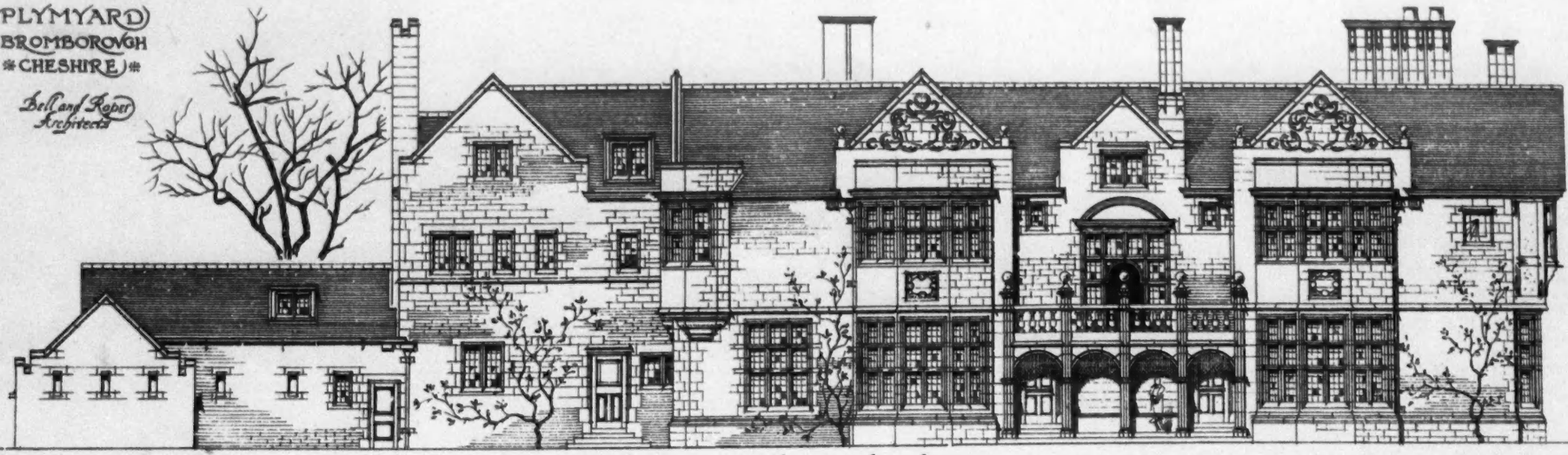
THE BUILDER, JUNE 20, 1868



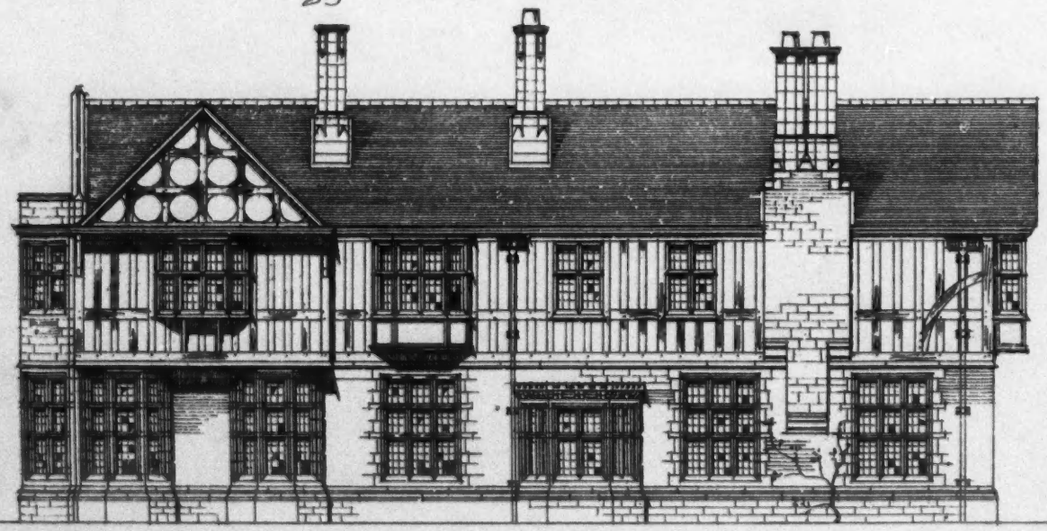
CHURCH OF ST. ETHELBURGA, BISHOPSGATE: THE CHANCEL.—Mr. H. D. Wilkinson, Architect.

PLYMYARD
BROMBOROUGH
CHESHIRE

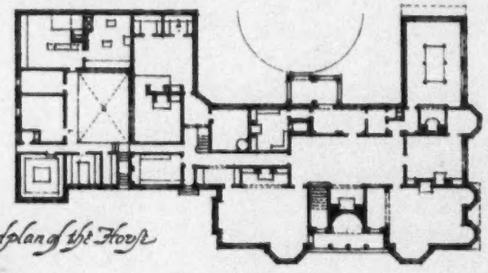
Bell and Koper
Architects



Elevation of the Garden front



South East Elevation



Ground plan of the House

The Entrance Gates

PHOTO-LITHO. SPRAGUE & Co 82, MARTINS LANE, CANNON ST. LONDON, E.C.

"INS-PHOTO," SPRAGUE & Co., 62, MARTINS LANE, CANNON ST., LONDON, E.C.

SHAKESPEARE MEMORIAL THEATRE, STRATFORD-ON-AVON: NEW SCENE DOCK AND LECTURE HALL.

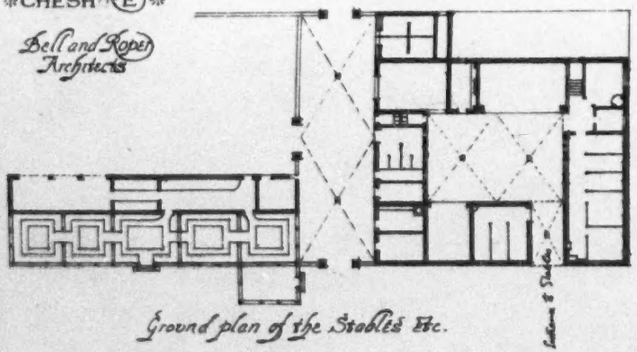
MR. ARTHUR S. FLOWER, M.A., ARCHITECT.

MEMORIAL CROSS TO THE LATE BISHOP OF LINCOLN AND MRS. WORDSWORTH.—MR. J. ARTHUR REEVE, ARCHITECT.

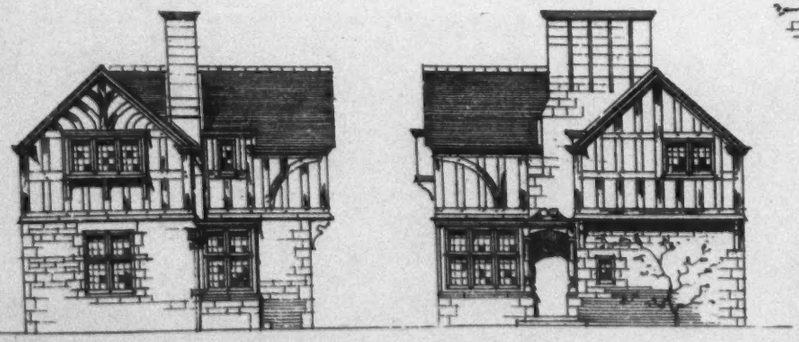
THE BLUE FOR JUNE 29 1889

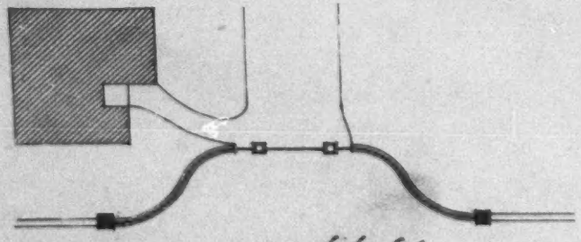
PLYMYARD
BROMBOROUGH
CHESHIRE

Bell and Roper
Architects

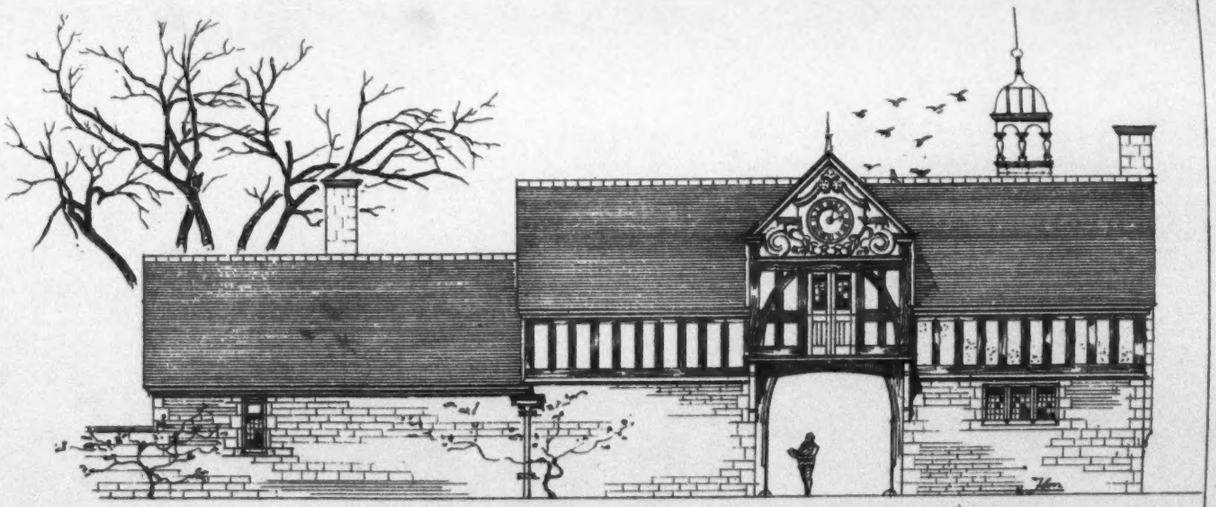


Ground plan of the Stables &c.





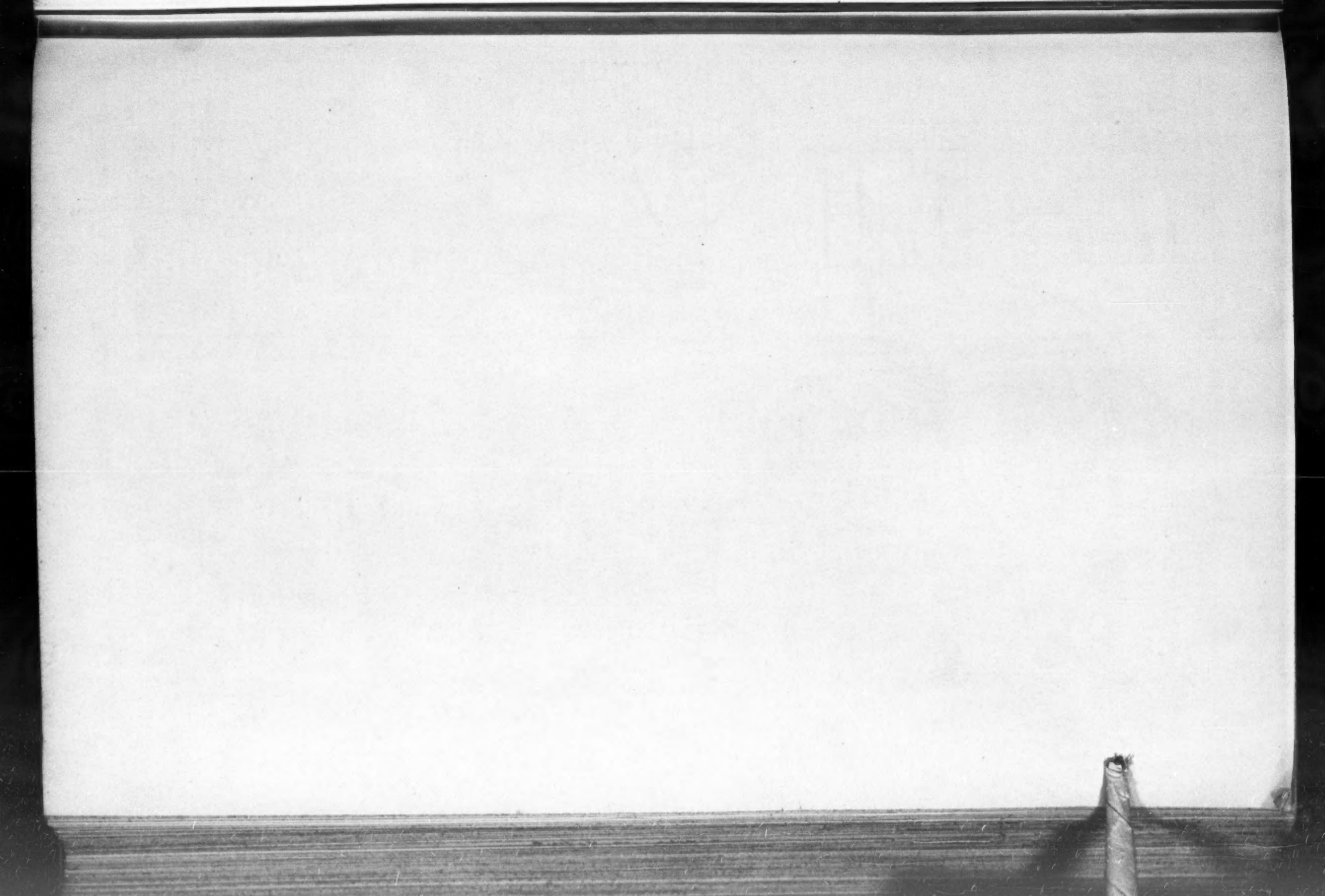
One of the Lodges



South East Elevation

North East Elevation

PHOTO-LITHO. SPRAGUE & CO. 20, MARTINS LANE, CANNON ST. LONDON, E.C.



until 1799, when all that still remained of the priory was demolished to make room for St. Helen's-place. The remains of the buildings and the crypt, with the Leathersellers' Hall above, are engraved in Cox's "Annals of St. Helen's." A view of the church, with the remains of the priory, as it existed in 1801, is given in Malcolm's "Londinium."

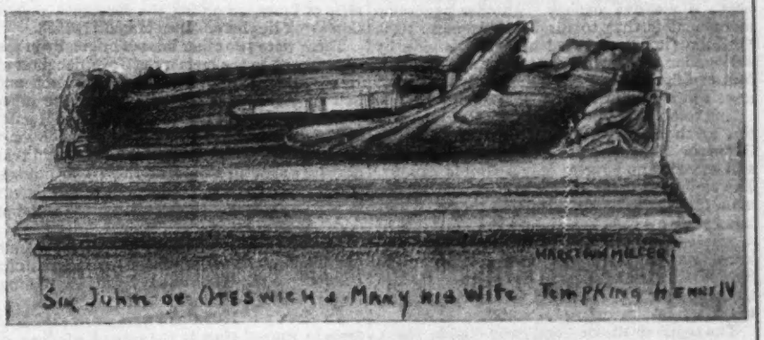
The parish church must have been in existence previously to the year 1010, as the remains of King Edmund the Martyr were removed from St. Edmundsbury and deposited herein for three years. The earliest portions of the church now remaining are the lancet windows of the transept, now blocked up; the staircase door in the south-east corner; the second arch north of the chancel; an aumbry under the pulpit; the doorway which led into the convent on the north side, with the two openings formerly guarded with gratings; and a lancet-window at the west end of the same side. These date from the thirteenth century. At this date the floor of the church must have been much lower than it is at present, and it was raised at each alteration of the church, until it is now 4 ft. higher than the original level. This was discovered at the restoration of the church in 1865-8, and is still visible on the north side and at the staircase of the transept.

The western doorway, with its oak porch internally covering the entrance, is the work of Inigo Jones, who restored the church in 1633.

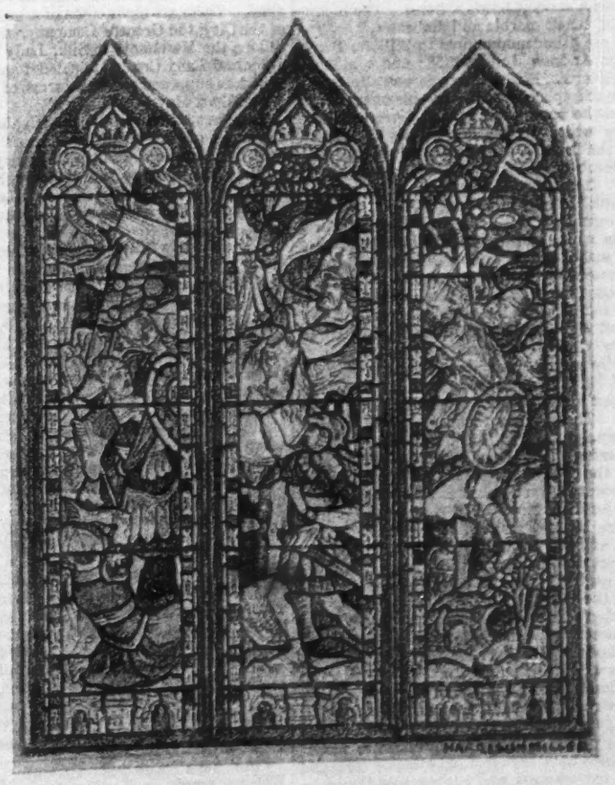
The Church of St. Helen is singularly rich in old tombs, fine specimens of the early fifteenth to the seventeenth centuries existing. Cox, its late historian, calls it, not inappropriately, the Abbey of the East. The following is a list of the most noteworthy of the tombs, illustrations of two of which are subjoined.

The earliest tomb is that of Sir John de Oteswich and Mary his wife, and was placed here after the destruction of St. Martin Oteswich in 1874. It consists of two recumbent figures lying side by side, their heads supported on pillows held by angels. The feet rest against two grotesque animals, as is common to the sepulchral monuments of the day. The hands of both figures are folded in prayer. Considering the vicissitudes through which this fine work has passed it is in a high state of preservation. The man's hair is parted in the centre, and is long and arranged in curls; he has a moustache, and a beard trimmed into two points. He wears a long robe reaching to his feet and carried high up to the neck, and long open sleeves. A leather belt encircles his waist, and supports a dagger, upon the scabbard of which are the initials I.H.S., while on the other side there is a wallet. The hands are gloved. The expression of the man's face is calm and dignified, and from his habit and other signs John de Oteswich must have been connected with the civil rather than the military administration of his day. The face of his wife is rather sharp, with pointed nose and small mouth, and a somewhat vixenish expression,—a strong contrast to the man's face. She is clothed in a long robe which reaches from her shoulders nearly to her feet and is just slightly taken in at the waist. An under-garment is visible, reaching below the waist. The head is covered with a veil, held out by cushions placed on either side of the head. Ornamental bands run round the neck and round the gloves, which latter are long. This tomb is now in the Chapel of the Holy Ghost, and is figured in Stothard's "Funeral Monuments."

Another fine tomb is that of Sir John Crosby and his wife, situate in the chancel. The figures are recumbent, as in the monument just described, and rest on a Gothic tomb, as shown in the illustration. Sir John is represented in plated armour, strapped at the elbows and buckled at the wristbands, with thigh-protectors and leg-pieces. The hands of both figures are folded in prayer. The male figure has over his shoulders a falling mantle with a standing cape, and round his neck a collar of rondeaux. His feet rest against a winged lion, which looks up at him. He wears a dagger at his right side, supported by a singular belt, but no sword. His wife is shown clothed in a close-fitting robe cut to her figure, termed a *pietan corps*. The sleeves are long and tight, and over the back of her hand passes a singular band. A necklace of roses hangs round her neck, and over her shoulders is another outer robe. She wears a girdle round her hips, supporting a charm or cordon. Her feet are covered by her dress, and rest against two animals, probably pet dogs. Dogs are often found at the feet of male and female figures on monuments, either as companions of their sports or



Tombs in St. Helen's Church, Bishopsgate.



Window in the Lady Chapel, St. Helen's Church, Bishopsgate.

By Messrs. Heaton, Butler, & Bayne.

symbols of their rank. Richard II. had a favourite greyhound named Matt, whose transfer of attachment from him to the usurper of his crown is naïvely told by Froissart. The monument originally had this inscription (in Latin) on it:—"Pray for the soul of John Crosby, soldier, alderman, and, during a portion of his life, mayor of the staple of the town of Calais; and of Agnes, his wife; of Thomas, Richard John, John, Margaret, and Joanna, children of the same John Crosby, soldier. He died in 1475, and she in 1466. On whose souls may God have mercy." The hair of Lady Crosby is confined in a net, and surmounted by a headdress in shape not unlike a helmet when the vizor is raised. The face is beautiful, with a proud expression upon it. A veil falls off on the cushion and under her head, which lies upon a cushion supported by angels. This monument is engraved in Gough's great work.

There is a very sumptuous tomb in the north aisle to Sir William Pickering, who died in 1574. The figure is clad in beautiful chased armour, and is that of a tall, well-proportioned man, with handsome, grave face, slightly inclined to baldness, with moustache and beard trimmed and kept short. The hips are padded, and there are ruffs round the neck and wrists. There is a heavy sword at his side. The figure is recumbent, the head resting on a rolled mat, and lies beneath a massive canopy. Another handsome monument is that to Sir John Spencer, 1609. Sir John (in armour) and his wife lie side by side under an elaborate canopy, and at their feet the figure of a girl (their only daughter) kneels at a small desk.

The tomb of Hugh Pemberton (1500), now in the north aisle, was taken from St. Martin's Outwich. It is despoiled of most of its brasses, and contains no figures, only a Gothic canopy. The elaborate tomb of Richard Staper, alderman (1594, died 1608), representing the husband with his sons kneeling on the right side of a small desk, while his wife and daughters kneel on the left, was also brought from St. Martin's, and is now in the north aisle. The tomb of John Robinson and wife is very similar to the one last mentioned.

The tomb of Martin Bond (who died in 1643), captain of the City trained bands, is very interesting, as it displays to perfection the costume of the times. Bond is represented sitting at the door of a tent, while two soldiers are on guard, and a servant holds a horse. The monument is of black marble and alabaster.

There are other monuments to William Bond, 1576; Sir Andrew Judde, 1558; and a hideous one to Bancroft, 1726. Bancroft was allowed to purchase the space upon which his mausoleum stands in the north aisle, and the present large and ugly white marble erection is the result. He was the founder of the Bancroft Hospital.

The tomb of Sir Julius Cæsar Adelmare is curious. It consists of the representation of a parchment deed, worded by himself in strict legal phraseology, with his own seals attached, carved in white marble, and let into the top of a black marble altar tomb. He was Judge of the Supreme Court of Admiralty, and was afterwards made Chancellor of the Exchequer (in 1606). He died in 1636. The monument cost 110*l.*

A small figure in alabaster, on a bracket in the Lady Chapel, is worthy of notice. It is beautifully carved, and was looked upon as a figure of St. Helen, but it is, undoubtedly, a Sybil, and dates before the time of Michel-angelo. There is no record to show how it came here.

The series of fourteen antique stalls, now forming the choir, were probably the nuns' seats. The elaborate carved pulpit is *circa* James I.

The tiles discovered in 1865 were reproduced by Messrs. Minton, and are used for paving the chancel, and are not only singular, but unique, the subject of a portion of them being a double-headed eagle, with evident reference to Constantine the Great.

St. Helen's Church still possesses five brasses, all of them interesting and excellent specimens of the art of metal-engraving. Mr. Cox, the latest historian of this church, gives no drawings of these brasses, which, considering the vicissitudes always attending these funeral relics, and the comparative scarcity of good examples, is rather surprising. Up to within a quite recent date brasses have been lost or seriously damaged through carelessness and neglect; and Malcolm gives an instance of a City church rich in old brasses which, when rebuilt in the eighteenth century, lost all its brasses through their having been sold as old metal to a plumber.

Of the two oldest brasses, one representing a priest in full canonicals, and the other a female figure, date about 1400, no record seems to exist, and it is therefore impossible to say who are the persons commemorated. The one containing the effigies of a London merchant and his wife, in the costume of the period, is to the memory of Thomas Williams, gentleman, and Margaret, his wife. The said Thomas died Jan. 16, 1495.*

The most elaborate and perfect of all the specimens is that of some distinguished gentlewoman of the latter part of the reign of Henry VII., whose costume is that which was worn by those aged ladies of that day who not unfrequently ended life in a nunnery as Lady Abbesses, or even as mere Sisters, to the no small emolument of the Church. Fairholt gives a drawing of a brass from the Church of Kingston-on-Thames, which represents Robert Skerne, of Kingston, who died in 1407, and his wife, Joan, which latter figure bears a strong resemblance to that of the brass in St. Helens.

The fifth brass, to the memory of John Leventhorpe, Esq., a figure clothed in complete armour, has the following inscription:—

"Here lies John Leventhorpe, Esq., one of the four Keepers of the Chamber to King Henry VII., who died August 6, 1510. May God have mercy on his soul. Amen!"†

The oldest memorial in the church is a plain strip of brass, recording the fact that Robert Cotesbrok lies here. Died March 11, 1393.

There were two other brasses originally in the church, one to the memory of Joan, daughter of Henry Seamer, and wife to Richard, son and heir to Robert, Lord Poynings, and the other to Thomas Benolte (A.D. 1534), Windsor Herald, and his two wives, the execution of which must have been exceedingly beautiful. It is said that drawings are still extant of these two brasses, and it is a pity they could not have been given in Mr. Cox's book. Gough alludes to them, but does not figure them.

Two other brasses let into one stone are from St. Martin Outwich; they represent John Brewix, rector, 1459, and Nicholas Wotton, rector, 1483.

Previously to 1865 there were many shields of arms in stained glass in the several windows of the church. Most of these were re-glazed elsewhere and utilised. The window in the Chapel of the Holy Ghost contains those that were in the window over the altar, blended with modern glass. There are eight coats of arms, viz., those of the City, the Grocers' Company, the Leathersellers, the Merchants in Silk, Lady Crosby, Sir John and Lady Crosby impaled together. The eighth is supposed to be the arms of Sir Ralph Astry, Lord Mayor 1493.

The first window in the north aisle contains the arms of the City, the Mercers' Company, Sir Thos. Gresham, and the Chicheley family.

The glass from the east window of St. Martin's is placed in the newly-discovered Lady Chapel and east dormer windows of the south transept of St. Helen's.

The church is full of coloured glass, but there is no special interest attaching to it. One of the windows,—that in the Lady Chapel,—is shown by the illustration on the preceding page. It is by Messrs. Heaton, Butler, & Bayne, and is somewhat original in treatment. The subject represented is "The Conversion of Constantine." Some of the windows are crude in colour and coarse and clumsy in drawing, and far too dark. It is with great difficulty the interior of the church can be seen, even on a light day, and when many of the windows themselves are of no particular artistic value it seems a great pity to shut out the light for the sake of getting a number of badly-executed windows.

The Shakspeare window recently put in in the north aisle is a most disappointing work. It is of Munich manufacture, and is absolutely devoid of interest, the ornamental portions being poor and not at all in harmony with the surroundings. If this is a fair specimen of modern Munich glass-painting, then the less we get of it in our public buildings the better.

It will be seen that the Church of St. Helen is full of interest to the student, as apart from its tombs "it contains," according to Cox, "specimens of almost every variation of the Pointed style, from the commencement of the thirteenth century to the declension of its use, when it yielded to the newly-imported architecture of Italy," one of the earliest specimens of which is to be seen in the woodwork of the porches and portions of the choir, and the two curious twisted Corinthian columns supporting an entablature highly enriched, and an attic panel now fixed to the pillar dividing the choir from the Chapel of the Holy Ghost. Upon the frieze are the arms of Sir John Laurence, Lord Mayor 1665. The use of this curious piece of woodwork was to sustain the Lord Mayor's sword and mace.

Those who are interested in the Church of St. Helen should consult Dr. Cox's "Annals of St. Helen's,"—Stow, Dugdale, Malcolm's "Londinium," and Gough and Stothard's "Funeral Monuments." The engravings in Stothard are very fine.

* The Latin inscription is:—"Hic jacet Thomas Williams, generos, et Margareta Uxor ejus qui . . . . Thomas obiit xvi. die mensi Januarij, a dñi, 1495, et . . . . Margareta obiit die . . . . mensi. Quorum animabus propitietur Deus. Amen!"

† The Latin inscription is:—"Hic jacet Johannes Leuenthorpe, Armig nup. unus quatuor hostiarior. cumere dom reg. Henri Septum. qui obiit vi. die Augusti, Aº. dñi. MVᶜXcuie die. Ppicietur Deus amẽ."

THE LONDON COUNTY COUNCIL.

A SUPPLEMENTARY Meeting of the Council was held in the Board-room, Spring-gardens, on Friday, the 21st inst., Lord Rosebery in the chair, to consider the question of

The City Livery Companies and their Properties.—This question was dealt with in a report brought up by Alderman Lord Hobhouse, Chairman of the Corporate Property and Charities Committee. This report recommended

"That Her Majesty's Government be requested to introduce into Parliament without delay a measure for the purpose of carrying into effect the reforms contemplated by the majority of the Royal Commissioners appointed in the year 1880, with reference to the Livery Companies of London, including a Bill on the principle of that which was introduced by Sir Charles Dilke and the Attorney-General in 1885."

The report stated that the value of the property legally vested in these companies was about £15,000,000, and pointed out that whereas in former days the companies were looked to as supervisors and regulators of their respective trades, and as trainers of young men therein, those functions, with only a few exceptions, had passed away. The majority of the members of the Royal Commission referred to in the Committee's recommendation suggested legislation for the following, among other purposes:—

"(*a*) Restraining the Companies from alienating their ancient Corporate property.

(*b*) Securing the permanent application of a considerable portion of the corporate income to useful purposes.

(*c*) Declaring new trusts of the trust property where a better application has become desirable.

(*d*) Publication of accounts.

(*e*) Scholastic and scientific objects; *i.e.*, education, elementary, secondary, classical, and technical, and scientific research.

(*f*) General public purposes; *e.g.*, hospitals, picture-galleries, museums, public libraries, public baths, parks, and open spaces.

(*g*) The improvement of workmen's dwellings, and, where the companies represent trades, subsidies to the benefit societies of such trades."

Of course there was considerable opposition to the recommendation of the Committee, but after a long discussion, the recommendation was carried by fifty-five votes for to fifteen against.

The usual weekly meeting of the Council was held on Tuesday last, in the Council Chamber, Guildhall, Lord Rosebery in the chair.

Tenders.—The first item of business on the agenda paper was to receive tenders (*a*) for the repair of two viaducts on the East Park estate, Hampstead; (*b*) for supplying and fixing 100 seats in Clissold Park. The lists of tenders, which were referred to a Committee, will be found under the heading "Tenders" in this week's *Builder*.

Contracts and the Rate of Wages.—Considerable time was occupied by the consideration of additional Standing Orders and References to Committees." The last paragraph of the "References" to the Asylums Committee was as follows,—

"The Committee shall require from any person or firm tendering for any contract a declaration that they pay such rates of wages, and observe such hours of labour as are generally accepted as fair in their trade, and, in the event of any charges to the contrary being established against them, their tender shall not be accepted."

Mr. Bassett Hopkins suggested the insertion of words to the effect that any such declaration as that mentioned should be deemed to be of the essence of the contract. After some discussion, however, it was resolved that this paragraph and all other similar paragraphs in the "References" should be referred to the special Contracts Committee appointed two or three weeks ago (see *Builder*, June 8, p. 433.)

Dangerous Structures.—The first paragraph of the Building Act Committee's report was as follows,—"The attention of your Committee has been directed to the absence of any arrangements for notifying to the District Surveyors the existence of dangerous or neglected structures within their districts. It appears not to be the duty of any officer of the Council to make such intimation, and the District Surveyors have to rely upon casual communications, or their own observations, to make them acquainted with the existence of dangerous walls or buildings. This

deficiency is particularly marked in cases where there is imminent danger to buildings resulting from fire, and your Committee are informed that it has never been the practice to give official notice to the District Surveyor in such cases. Your Committee think that it would greatly assist the District Surveyors if the daily returns of fires in the metropolis were communicated to them, so far as these relate to serious or extensive fires, in order that they may visit the respective localities, and ascertain the existence of any dangerous walls or buildings, and your Committee recommend that the Fire Brigade Committee be instructed to make the necessary arrangements accordingly."

This was unanimously agreed to.

The Housing of the Working Classes. — The Report of the Committee on the Housing of the Working Classes contained the following paragraph and recommendation, — "On April 30 last, the Council, on the recommendation of your Committee, instructed the Solicitor to lay a case before counsel upon certain doubtful points which had arisen as to the construction of the Acts relating to the Housing of the Working Classes. A case was accordingly laid before Mr. Meadows White, Q.C., who prepared a valuable opinion bearing upon several of the points at issue. As regards the duties of the Medical Officer, Mr. Meadows White is of opinion that the Council might, with the consent of a Secretary of State, appoint its Medical Officer, recently appointed under the Local Government Act, 1888, to be its Officer under Sec. 13 of the Act of 1875, and that in such a case he might make the necessary official representation and initiate proceedings. Such a special appointment would, however, be necessary, as his general appointment under the Act of 1888 does not give him the requisite power. This, in the opinion of Mr. Meadows White, might give the Council greater freedom of action under Cross's Acts, and greater choice of sites of operation under the Acts than heretofore. Your Committee think it desirable that the Council should apply to the Secretary of State for his assent to the appointment of Mr. Shirley F. Murphy as Medical Officer to the Council under Sec. 13 of the Artisans' Dwellings Act, 1875, and they recommend that application be made to the Secretary of State accordingly."

This was agreed to, and after transacting other business, the Council adjourned.

CASES UNDER THE METROPOLIS MANAGEMENT AND BUILDING ACTS.

Infringement on Line of Frontage.

AT the Hammersmith Police-court, Richard Jones, of 170, Askew-road, Shepherd's-bush, builder, was summoned by the London County Council, for that at the above address he did unlawfully erect a building beyond the general line of buildings in Askew-road, without the consent of the Council, contrary to sec. 75 of 25 and 26 Vic., c. 102.

Mr. Thos. Burton, solicitor, appeared for the Council, and Mr. A. Abrahams for the defendant.

Mr. Millwood, surveyor to the Council, having produced and proved the Superintending Architect's certificate showing that the building was beyond the general line of buildings in Askew-road,

Mr. Curtis Bennett said he should make an order for the demolition of so much of the building as came before the general line within a month, with costs.

Wooden Structures.

Henry Hall, of Fleet-road, Hampstead, appeared before Mr. Cooke, at the Marylebone Police-court, on an adjourned summons, taken out by Mr. Smallpeice, District Surveyor, for putting up five wooden structures or erections of a movable or temporary character, without having obtained the licence of the London County Council. Mr. Freke Palmer defended.

Mr. Smallpeice stated that the structures consisted of a canvas booth, a steam roundabout 30 ft. in diameter, with a canvas roof, a shooting-gallery with an iron roof and a wooden front, and a travelling caravan. Most of them were on wheels, and close to the property of an adjoining owner.

Mr. Palmer said his client had nothing to do with the show-booth, and Mr. Smallpeice withdrew the summons in respect of it. In cross-examination, Mr. Smallpeice said he supposed it would take about a week to get the licence of the London County Council. Mr. Palmer produced an official document to show that the Vestry received rates on an assessment which included the land in question, let out for the purposes of swings, &c.

Mr. Cooke, in giving his decision, observed, that he had nothing to do with what the Vestry had done. This was a matter for the County Council. The mere question of swings was not before him. What he had to decide was the question of the erection of a certain building. It was not necessary that the building should consist of bricks and mortar,—it might be constructed of wood; nor was it necessary that it should be fixed to the ground. There were two decisions which bore on the case, that in the case of Quilter *v.* Smart being of considerable importance. The Act 45 Vic., c. 14, sec. 13, was as follows: "It shall not be lawful for any person to erect or set up in any place any wooden structure of a movable or temporary character (unless the same be exempt from the operation of the first part of the Metropolitan Building Act, 1855) without a licence in writing first had and obtained from the Board." The Act, therefore, included wooden structures and movable erections in any place whatever. The object was quite clear, to protect against fire. There were certain exemptions in the Act, but these structures did not come within that category. Of course, a mere pole put up for children to swing upon would not come within the meaning of the Act, but a steam roundabout with an organ in the centre, and a canvas cover over it, such as had been described, was specially a building within the meaning of the Act, for which it would be necessary to get the licence of the London County Council. He should fine the defendant in the nominal penalty of 20*s.* and 2*s.* costs. Mr. Cooke said that he did not intend his decision in this case to be a side wind for doing away with fairs; that could be done in a different way.

Neglect to Give Notice.

At the Lambeth Police-court J. O. Curtis was summoned by Mr. Geo. Elkington, District Surveyor of Penge, for neglecting to give notice of a small wooden office at a timber yard in Oakfield-road, adjoining Penge Station, contrary to the Building Act.

The defendant said it was not necessary to give notice as the building was only a wooden one.

Mr. Partridge said he should hold that notice was necessary, and fined defendant 40*s.* and 12*s.* costs.

At the Hammersmith Police-court, Charles Butcher, a builder, was summoned by Mr. A. Moseley, District Surveyor of Fulham, for erecting houses in Delaford-street without first giving notice as required by the Building Act. The case was gone into recently upon another summons, in which Mr. Moseley stated that he received notice in the name of Chas. Bryan, but when a statement of fees was sent in, it was returned. That summons was withdrawn, but as the defendant admitted that he had succeeded Bryan, and had failed to give notice of the change, a summons was granted for that offence. The case now came on for hearing, and Mr. Moseley said it was one of considerable importance, because if builders could set up bogus names, there would be no remedy in cases of irregularity. He added that Bryan was employed to do the labour, and was known by other names.

Mr. Frank Boyton said he let the plots of land to the defendant.

The defendant said he had power, under the agreement, to let the land at improved rents.

Mr. Curtis Bennett said he thought it was a bad case, and fined the defendant 10*l.*, and 4*l.* 4*s.* costs.

Laying-out of New Streets.

At the Wandsworth Police-court, Major Jas. Childs, of Cedar Lea, Clapham-common, was summoned by the London County Council for unlawfully forming or laying out a certain road, passage, or way, on the north side of Malva-road, Wandsworth, for building, as a street for carriage traffic, in such a manner that such road, passage, or way would not afford direct communication between two streets, without the sanction of the late Metropolitan Board of Works or the London County Council, their successors in law, contrary to 45 Vic., cap. 14, sec. 7.

Mr. Thos. Burton, solicitor, appeared for the London County Council, and Mr. Glen for the defendant.

Mr. Burton said the facts were that the defendant in 1885 gave notice that he would lay out three streets running out of and returning into Malva-road, and in March last the defendant first commenced building; and his contention would be that such laying out in this way was a clear attempt to evade the Act.

After hearing the surveyor for the Council, and the defendant, Mr. Plowden said he should decide that the defendant had complied with the Act, and should dismiss the summons, with 2*l.* 2*s.* costs.

Notice of appeal was given.

At the Hammersmith Police-court, Thomas Godfrey, a carpenter and builder, was summoned by the London County Council for laying out Keith-road, Uxbridge-road, without making direct communication between two streets.

Mr. Chilvers, from the County Council, said that on March 5 the defendant was convicted on two summonses, and the road was still in the same condition, nothing having been done to comply with the Magistrate's order, and he was instructed to ask for the continuing penalties.

Evidence was then given showing that the defendant had rendered himself liable to penalties for ninety days.

Mr. Farman, who defended, wished to reopen the case on the merits, but Mr. Curtis Bennett said he should not allow this to be done. Then Mr. Farman said it would cost 2,000*l.* to make the necessary communication.

Mr. Curtis Bennett said he should fine the defendant 50*l.*, being a moiety of the penalties, with 2*s.* costs, the amount to be paid within twenty-eight days; in default defendant would be imprisoned for three months.

CAMBRIDGE UNIVERSITY LIBRARY ADDITIONS.

SIR,—In your somewhat unfavourable notice of the drawing in the Academy of Mr. Pearson's addition to the Cambridge University Library, you have overlooked the incomparable difficulty of the problem to be solved. In the centre of the site occupied stands the beautiful, but unfinished, gateway of Henry VI. When Cockerell's classical building was erected, about half a century ago, it was proposed that the gateway should be destroyed or erected elsewhere, and that the quadrangle should be completed in uniform style. It is a sign of progress that the quadrangle is now being completed without the destruction of the gate.

The problem set to Mr. Pearson was to build the west side of a court, of which the north side was built by Cockerell (*circa* 1835), the south side by Scott (*circa* 1862), and the middle of the west side by Henry VI. (*circa* 1445). A. H. S.

*** We had certainly forgotten at the moment that the central gateway was old; but if English architects will persist in their unarchitectural practice of exhibiting mere pictures with nothing to show the plan and the practical conditions which are the basis of all architectural work, they have only themselves to thank if they are misunderstood. No French architect would think of exhibiting a drawing of such a scheme without a fully explanatory plan. As to the main point of our criticism, however, we do not consider the conditions named make much difference. If it is contended that it was impossible to connect the old gate and Cockerell's building in any logical manner, we should call that a humiliating confession for an architect to make; if (as the drawing seems to indicate) Mr. Pearson was careful to show respect to the Mediæval gateway, but cared not a jot how he treated Cockerell's building, because it was Classic, that is merely architectural bigotry; and Cockerell, both as a gifted architect and a man of high intellectual culture, had a claim to have his work treated with more respect.—ED.

THE CITY WALL.

SIR,—Apropos of your notice [p. 449, *ante*] of the alterations now being carried out in Ludgate-hill, on the site of the gate, may I call your attention to the fact that during the last two or three weeks excavations have been in progress on the site formerly occupied by Aldgate? The Corporation have been widening Duke-street, the houses on the eastern side of that thoroughfare having been pulled down and the frontage set back several feet. Messrs. Mills & Co.'s premises at the corner of Duke-street and Aldgate occupied nearly the site of the old gateway, and when the building was removed and the foundations exposed, the remains of the wall were found on the eastern portion of the site, and to the west and south-west of this the workmen came on massive walls, which extended across Duke-street and were continued under the present roadway of Aldgate, possibly the solid foundations of a tower or other structure attached to the gateway. The construction seemed chiefly of rubble, large masses of limestone being mixed with pieces of grit-stone, brick, tile, &c., the whole firmly bonded with mortar, forming a solid mass that had to be broken with wedges. The remains found were probably of Mediæval date, though pieces of Roman tiles appeared to occur here and there, suggesting that the remains of an earlier structure, or perhaps a part of the Roman wall, had been used in the work. Less alteration would seem to have taken place in the eastern part of the City wall than was the case elsewhere, and remains of the original Roman construction have been found at a number of points between the Tower and Bishopsgate within the last few years.

R. B.

TENDERS.

SIR,—How quickly we feel the shoe pinch when it is upon ourselves. In the *Builder* for the 8th inst., p. 983, a firm of contractors publish a complaint. The Kent County Authorities have refused to give them a list of the tenders received for some work for which the complainants had estimated. Your correspondents feel aggrieved. We heartily sympathise with them. It is of vital importance to contractors that such information should be readily obtained by them. It gives to the individual a most valuable check on his system of tendering, leaving out of account any question of fair play. No wonder contractors feel aggrieved when information of this kind is withheld. Granting so much, we should greatly like to know how many contractors do as they would be done by. They are constantly asking for tenders from merchants, from manufacturers, and others. How often do they give to persons so tendering the information which they themselves so value, and the withholding of which they feel to be such a grievance?

Our own experience is that it is the exception, and not the rule, for contractors to give any information whatever as to tenders received by them. But it is quite as important for manufacturers to know by whom and by how much they are underbidden, or of the difference between the accepted and unac-

cepted tenders, as it is for contractors to obtain this knowledge. We are quite of the opinion contained in your editorial footnote that "to refuse to give a list of tenders is not only unfair and discourteous to the firms tendering, but impolitic." The faintest feeling of justice would seem to dictate that contractors themselves should not be the only exceptions to the general rule.

Bristol. ARTHUR LEE & BROS.

THE TEMPLE FOUNTAIN.

SIR,—Allow me to complain of a fountain spoiled,—and there are few fountains indeed in London. Simple as it used to be, with its single tinkling jet, rising and plashing back in the light of the sun, among the tender green lime-trees overshadowing the pavement, anybody accustomed to pass by the courts of the Middle Temple will know what fountain I allude to.

They did put a stucco crane in the middle, but I suppose it has crumbled away. My main complaint is against the surrounding meagre twisted iron bar fence. The circular basin is set in the middle of this square. The spaces between the four lines of the square and the round is filled in with staring mould, in which grow or straggle some miserable, stunted laurel shrubs. The thing is an abomination. The twisted iron railing should be removed, and the small suburban garden iron imitation pebble-border round the mould line flung into the Thames, followed by the shrubs. A more graceful centre for the water rising might be imagined—a metal figure, perhaps; then, sloping down to the water's edge, and about 4 ft. wide, a smooth turf ring following the outline of the basin, then a flagstone paving, 2 ft. wide, for the sitter's feet to come upon,—and last, not least, four or five low stone seats for three each, at intervals, curved to follow the outline of the outside circle.

With the privacy of the Temple and its guardians (I noticed the attendant asking a young man not to sit even on a railing in the vicinity), there ought to be no difficulty in keeping the turf border in a perfect state.

TEMPLAR.

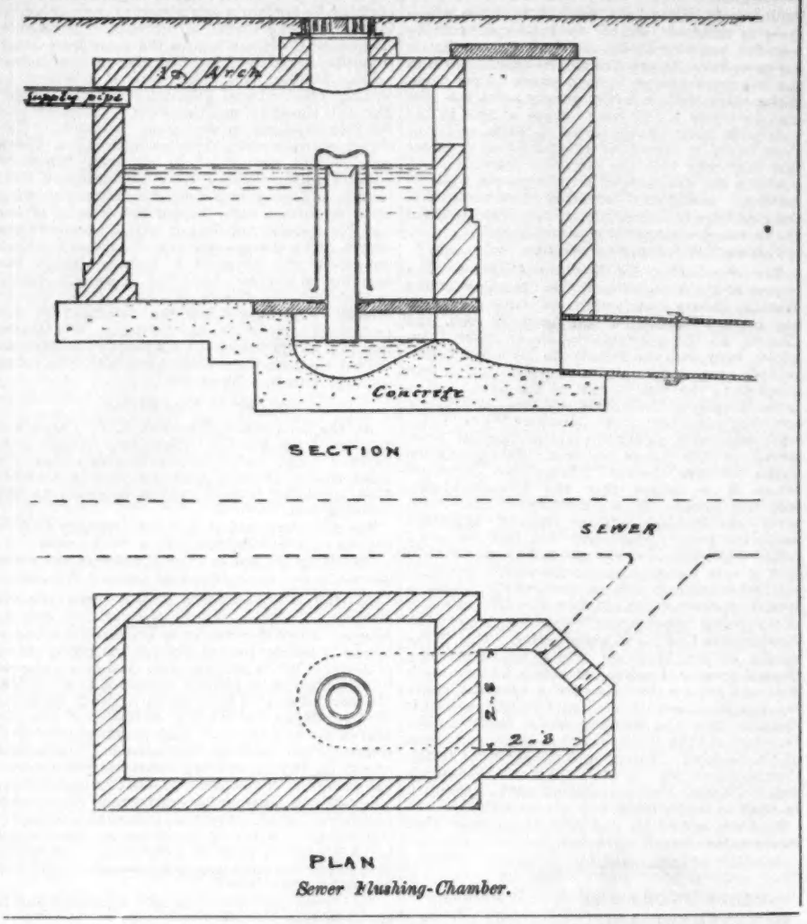
The Student's Column.

TOWN DRAINAGE.

XXVI.—SEWERS: THEIR UPPER ENDS.

IN the concluding article of this series we make a few remarks on some points of sewerage and sewage-disposal; but first we may say that in large manufacturing towns the Sanitary Authority sometimes undertakes the flushing of the drains of small houses where, as is usual, a number can be combined together. This is done, at no great expense, where such houses have a common yard or court, by means of the trough-closet or latrine system, where there is a road at the back or where the closets are approachable from the public street. But this system can only be adopted by placing the flushing under the charge of the Sanitary Authority. A long trough, kept charged with water, belongs to four or more houses. Access to the outlet valve is given at the back to one of the sewer-men, who discharges and refills the trough once a day, and when the place is well arranged he does this without the necessity of entering the premises. It may be observed that the interval of time determined upon should be strictly attended to, whether it be once a day or otherwise. The system is somewhat the same as that of the latrines of a military camp, and is suitable also for factories and large workshops. A cistern overhead is supplied with water from the street main, and from this the trough,—which, however, is not so much a trough as a series of earthenware pipes, each 2 ft. 6 in. or 3 ft. long, jointed in the same manner as large sewer-pipes, and each one having a vertical branch,—is flushed at regular intervals of time. The flushing may be done by an automatic siphon placed in the tank overhead, the dimensions of the discharge-pipe being such as to empty the tank at short intervals. For a length of trough of 12 ft., which may contain three or four divisions, the tank holds 50 gallons; for a greater length 75 or 100 gallons. With this automatic arrangement there is no outlet valve, the water being confined to the trough by a lip at its lower end, over which the contents are discharged.

Near the boundary of the drainage area, in the upper parts of a system of sewerage, the sewers require regular flushing. The house-drain junctions are far apart, and while each house-drain may be kept free from deposit by its own provisions, when the sewage enters the larger dimensions of the sewer those provisions no longer take full effect. Moreover, the sewers being in public roads, and these, in the upper parts of the town, being perhaps made and repaired with broken stone,—or "macadamised,"—the grit which is washed into the sewers from road surfaces is a serious hindrance to the flow of sewage. The stone used for road-making and repairing is the best that can be procured when the traffic is great, and in general the best stone for this purpose is the heaviest, and the detritus washed into the street gullies is of a heavy nature. It is for this reason that it is caught in the street gullies and removed from them, with the intention of preventing its entry into the sewers, but a large quantity escapes with the water, notwithstanding this provision, because the gully pits are not large enough to act as settling-tanks for the road-drift washed into them in heavy rainfalls. They catch, indeed, but a small portion of it, sometimes, and it would be impracticable to make the pits large enough to intercept much more than ordinary street-gullies do. They are useful, inasmuch as they retain most of that brought into them by light rainfalls; but on the occasion of a strong run of water from the streets a great deal of the detritus is carried into the sewers. It is twice as heavy as water, sinks to the bottom, and forms almost a solid mass, difficult to remove by any means short of manual labour, if left to become hard and concreted. It should be kept moving, to prevent it settling into a solid mass. The drawing, the scale of which is $\frac{1}{4}$ in. to a foot, shows a flush-tank suitable for a 15-in. sewer, in which is fixed an annular siphon, the inner or discharging leg of which is $8\frac{1}{2}$ in. diameter, its length 4 ft. 6 in., projecting 12 in. below the bottom of the tank, the depth of water being 3 ft. 6 in. With this size of siphon the water-area of the tank should be 40 square feet, say, 10 ft. by 4 ft. or 8 ft. by 5 ft., and, in general, 100 times the sectional area of the pipe, which is made in various sizes,—viz., for a 21-in. sewer, 12 in. diameter; for 18-in. sewers, 10 in.; for 15-in. sewers, $8\frac{1}{2}$ in.; for 12-in. sewers, 7 in.; for 9-in. sewers, $5\frac{1}{2}$ in.; and for 6-in. drains, 4 in. diameter, their lengths varying from 5 ft. 6 in. to 3 ft., with a projection below the bottom of the tank varying from 14 in. to 10 in., according to the other dimensions. The concrete and brickwork are rendered with cement $\frac{1}{2}$ in. thick.



Sewer Flushing-Chamber.

But irrespective of this question of road drift, there are cases in which flush-tanks are still required at the upper ends of sewers. There are two main principles of sewerage with respect to the rainfall. In one it is all carried off by the sewers to the outfall, or to such points in that direction as may be necessary, storm outlets to the river carrying away from these points the excess of water beyond the capacity of the sewer below them. The other principle is to exclude from the sewers as much of the rainfall as may be practicable,—that is to say, the water from the road surfaces and the front slopes of the roofs of buildings, that which falls upon the back slopes, and upon the area of the back premises generally, going into the house-drains and thence into the sewer, the other and greater part being diverted into the old road-drains and culverts, which conduct it direct to the river, or to a stream leading to it. But it is a difficult question, for the first washings of a road surface, where there is much traffic, are as foul as the sewage itself. There are some points in town drainage in which there is room for much improvement, and this is one of them. At present it does not appear practicable to take into the sewers these first washings and exclude the greater quantity which follows in heavy rains; but it may safely be said that to whatever extent this heavy road drift is admitted into sewers it is an enemy to the system, and even if carried to the outfall its objectionable properties remain to be dealt with.

The sewage which arrives at an outfall of a system of sewers has four principal sources: the waste water of houses, trades purposes and public sanitary purposes such as have been named, rainfall, and ground-water. The quantity resulting from the first two sources is that of the water supply, as nearly as can be found by gauging the sewage in dry weather and comparing it with the quantity of water known to leave the service-reservoir during the time over which the gaugings extend. The quantity issuing from the house-drains and from manufacturing premises into the sewers may not be quite so much as that of the water supply, a part being lost by soakage and evaporation; but, on the other hand, there is some small quantity of ground-water, even in dry weather, which nearly equalises the two quantities.

Inasmuch as sewers are made watertight,

they neither let out sewage nor admit ground-water anywhere but at the appointed places; while the house-drains, although they let out no sewage, purposely admit ground-water in the manner pointed out previously. It has, therefore, to be considered that for months together the quantity of sewage will be no greater than the water-supply, while the dimensions of the sewers must be such as to carry off the rain-water which may be admitted to them. Upon this arises the question of density of population per acre of ground, which varies much in different towns and in parts of the same town. In some towns, in parts of the area,—and in large towns in most parts,—the ground is so covered as to throw off all the rain-water as fast as it falls, the density of population and consequent quantity of sewage per acre being also in these parts greater than the average, while in other parts both these are much less than the average; but inasmuch as all parts may at a future time become closely built over, the capacity of sewers cannot be varied on this account. Most towns average about fifty persons to the acre, from which the quantity of sewage may be calculated; and not more than ¼ in. rainfall in twenty-four hours can be carried off to the outfall in sewers of ordinary dimensions, all water resulting from a rainfall greater than that either overflowing at the storm outlets or being excluded from the sewers. But while the ¼ in. rainfall may in some parts of a town nearly all run directly into the sewers, the average quantity resulting from the whole area may be taken at not more than half the quantity which that rainfall represents, and this is about twice the dry-weather flow of sewage. On these occasions the sewers in the middle and lower parts of a town are well flushed, but it is a very wet day on which ¼ in. of rain falls, and does not often occur, on an average of years. But in the upper parts of a town, towards the dead ends of sewers, the same degree of flushing by rainfall does not take place, and in these parts flush-tanks should be constructed, especially where these upper parts consist of table-land, from which, as a whole, there may be fall enough, but within the district itself the sewers can hardly be kept in working order without them.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

9,273, Fastening Wooden Flooring. C Bennet.

According to this invention, sleepers are embedded in a layer of concrete, and the sections of flooring are secured by means of screws. The spaces between are filled up by strips, and slips are used for concealing the heads of the screws.

10,365, Paint-removing Compound. E. Oates.

This invention relates to an improved composition, and the preparation of the same. Caustic soda is the base of the mixture, which is said to remove the paint without attacking the wood.

11,249, Syphon Drain-pipes. W. Ross.

According to this invention, a syphon-pipe is made with the necessary dip to enable the flowing liquid to form a seal, and the interior of the pipe is coned or tapered, and the crown of the pipe is also extended upwards and formed into a tapered outlet branch. The centre of the pipe has a bulbous configuration, and the ends are made so that they may be connected to any ordinary drain-pipes.

14,402, Self-acting Window-sash Fastening. E. Edwards.

The fastener which is the subject of this patent is fixed at the sides of the window-frame, and consists of an automatic locking arrangement engaging in a rack or ladder catch.

2,844, Artificial Stone. A. C. Ponton and Others.

The novelty which is claimed in this patent consists in the combination of a silicious binding cement with a carbonate of lime and powdered whiting and sand. Articles moulded in this are exposed to a heat of about 360 deg. Fahr., when the plaster will set hard.

3,241, Window Fastening. J. Day.

By means of this invention, instead of the ordinary catch, a double one is provided, with two arms working in the same way that an ordinary sash-fastener acts, but meeting in the centre when closed, and lying back flush when it is desired that the window shall be opened.

3,763, Chimney Cowl or Pot. W. Mitchell and W. T. Hare.

To prevent down-draughts, the cowl which is the subject of this patent is made so that the top and bottom are wider than the central part of the cowl, either curved or tapering from the outer ends to the centre. The shape of the pot thus resembles that of a dice-box, and it is claimed that this prevents down-draught.

NEW APPLICATIONS FOR PATENTS.

June 11.—9,593, J. Lord and W. Heys, Water-closets.—9,616, C. Henderson, Heating and Ventilating Houses.—9,628, J. Holland, Water-closets, Lavatories, &c.—9,644, W. Byers, Preventing the Shaking or Rattling of Window-sashes.—9,666, E. Nunan, Base for Plastering, &c.

June 13.—9,726, F. Bolus, Sewer-gas Preventive Pipe.—9,742, J. Smith, Ventilating Flues for the Prevention of Down Draught.—9,760, A. Katz, Construction of Ceilings.

June 14.—9,807, J. Upton, Bolts for use with Double-door Cabinets, &c.—9,813, O. Elphick, Syphon Flushing Apparatus.

June 15.—9,843, J. Hadfield and Others, Manufacture of Asphalte.—9,875, W. High and J. Hannaford, Slabs, Mouldings, and Enrichments for all kinds of Plastering.

PROVISIONAL SPECIFICATIONS ACCEPTED.

6,964, R. Watson, Window-fastener.—7,429, O. and J. De Haer, Scaffolding for Decorators, &c.—7,650, H. Whitehouse and J. Clifford, Floor Springs for Swing Doors.—7,696, C. Young, Mortice Locks and Latches.—8,019, W. Macdonald, Ventilation adaptable to existing Sash-windows.—8,130, A. Chartres, Machinery for making Bricks and Tiles.—8,233, J. McLaws, Wood-working Machines.—8,428, M. May, Artificial Stone.—8,511, E. Bussy, Compounds for the Manufacture of Bricks, Tiles, &c.—8,517, J. Churchill, Ventilation.—8,595, C. Ashworth, Emergency Exits for Theatres, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

9,803, A. Hogan, Building Construction.—10,298, J. Way, Apparatus for Curing Smoky Chimneys.—11,610, H. Johnson, Bricks for Pavements and Floors.—11,811, F. and M. Baker, Door-checks.—12,722, J. Finnie, Automatic Door-bottom Guard.—4,522, T. Page, Glazing Bars for Roofs, &c.—6,373, F. Schmaltz, Saw-sharpening Machines.—6,653, E. Köster, Wood-carving Machine.—7,040, D. Davies, Window-catch.—7,463, S. Gully, Locking Doors.—7,567, A. Caudle, Combined Burglar Alarms and Sash Locks.—8,060, J. Maw, Metallic Lathing.

RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JUNE 12.—By FAREBROTHER, ELLIS, & Co. (at Winchester).

Winchester—F. enclosure of land, 2a. 2r. 15p.	£550

JUNE 13.—By WYATT & SON (at Midhurst).

Sussex, Midhurst—Enclosure of land, 12a. 1r. 12p.	1,650
F. accommodation land, 10a. 3r. 32p	1,600

JUNE 17.—By WINCH & SONS.

Cranbrook, Kent—"Hancock's Farm," 126a. 0r. 16p., f.	3,220

By BENINGFIELD & TIDY.

Braughing, Herts—"Dassell's Farm" and 109a. 2r. 20p., f.	1,570

By G. JACKSON.

Braughing Station, near—"Stockall's Farm," 7?a. 3r. 10p	750

By WEATHERALL & GREEN.

Forest-hill—55 Houston-rd., f., o.r. of £20 p.a.	330
Stratford—115, 119, and 121, Angel-rd., f., u.t. 49 yrs., g.r. £17. 12s. 6d., r. £120 p.a.	760

By MONTAGU & ROBINSON.

Mottingham—F.g.r. of £45, with reversion in 79 yrs.	935
F.g.r. of £32, with reversion in 80 yrs.	650
F.g.r. of £16. 10s., with reversion in 986 yrs.	325
F.g.r. of £5. 5s., with reversion in 77 years	105
Foot's Cray—F.g.r. of £85, with reversion in 80 yrs. to r. 345 p.a.	1,220

By H. DONALDSON.

Kingsland—142, High-st., u.t. 78 yrs., g.r. £17, o.r. £80 p.a.	745
South Hornsey—94 and 96, Spencer-rd., u.t. 63 yrs., g.r. £12, r. £49 p.a.	420

JUNE 18.—By A. H. LAWRENCE.

Acton—28 and 30, Myrtle-rd., f., r. £46 p.a.	570
77, Park-rd. North, f., r. £22 p.a.	190
73 and 75, Bollo Bridge-rd., f., r. £44 p.a.	400
39 and 41, Stanley-rd., f., r. £47 p.a.	380
1 and 2, Ada-villas, f., r. £42 p.a.	425

By SLADE & BUTLER.

Twickenham, Clifden-rd.—F. land, 1a. 1r. 5p.	910
Reversion to one-sixth share of f. and l. g.r. of £113 p.a., and one-sixth of £130 in cash, life aged 73 yrs.	245
A similar interest to the above sold for	315

By WESTON & SON.

Brixton—34, Harold-st., u.t. 78 yrs., g.r. £8	400
193, Brixton-hill, f., o.r. £70 p.a.	930
Camberwell—6, Cambridge-ter., u.t. 80 yrs., g.r. £9. 9s. p.a.	550

By P. HODSON.

Stroud-green—23, Florence-rd., u.t. 86 yrs., g.r. £7, o.r. £42 p.a.	350
Finsbury-park—7 and 9, Brownswood-rd., u.t. 90 yrs., g.r. £14, o.r. £80	745

By BATE & CO.

Kilburn—34, St. Julian's-rd., u.t. 75 yrs., g.r. £10, o.r. £50 p.a.	310
35, Cambridge-rd., u.t. 60 yrs., g.r. £10, o.r. £50 p.a.	330

By H. PAYNE.

Enfield, Gordon Estate—Four plots of f. land	175

By W. T. MARSH.

Fulham—6, May-st., u.t. 76 yrs, g.r. £4, r. £30 p.a.	£235

By THURGOOD & MARTIN.

Adelphi—7, York-bldgs., f., o r. £85 p.a.	1,280

By B. BROWN.

Ratcliff—92, Brook-st., u.t. 145 yrs., g.r. 4s., r. £13 p.a.	100

JUNE 19.—By C. W. MILLAR.

Hyde-park—14 and 17, Craven-ter., f., r. £196 p.a.	3,030
19, Craven-ter., f., with possession	1,300
St. John's-wood—45, Townshend-rd., u.t. 31 yrs., g.r. £10. 10s., with possession	400

By ELLIOTT, SON, & BOTTON.

Hyde-park—21, Pembridge-sq., f., r. £350 p.a.	7,420
Kew-green—"Ivy House" f., r. £100 p.a.	1,600
Portland Estate—9 and 10, Union-st., u.t. 16 yrs., g.r. £22 p.a.	505

By Messrs. TROLLOPE.

Bushey-heath—"County End Cottage" and 2a. 2r. 31p., f.	1,000
"Rose Cottage," f., r. £15 p.a.	250

By HODSON, RICHARDS, & CO.

Homerton—45 to 67 odd, High-st., f., r. £183 p.a.	2,060

By HENRY & LATCHFORD.

Stockwell—55, Willington-rd., u.t. 59 yrs., g.r. £5, r. £26 p.a.	195
Clapham—61, Old Town, the lease and good-will, u.t. 7 years, r. £50	150
63, Landor-rd., u.t. 79 yrs., g.r. £7. 5s., o.r. £36 p.a.	310
39, Landor-rd., u.t. 79 yrs., g.r. £7. 5s., o.r. £30 p.a.	300

By PRICKETT & ELLIS.

Lewisham—38, Limes gr., u.t. 46 yrs., g r. £4. 10s., r. £30 p.a.	200
Blackheath, Humber-rd.—"Cumnor" and "Middleton" Houses, f.	1,135

JUNE 20.—By W. W. JENKINSON.

Rotherhithe—Two-fifteenth share of the Lavender Dry Dock area 46,000 ft., f.	620
One-fifth share of the "Globe Dry Dock," the "Wheatsheaf" public-house, and 334 and 336, Rotherhithe-st., f.	460

By F. J. BISLEY.

Bermondsey—26, 28, and 30, Camilla-rd., u.t. 45 yrs., g.r. £14, r. £96 p.a.	750
252, Southwark-pk.-rd., u.t. 30 yrs., g.r. £7, r. £60 p.a.	665
Deptford—1 to 4, Margaret-pl., u.t. 13 yrs., g.r. £10, r. £53 p.a.	200
Tottenham—1, Caroline-villas, f., o.r. £36	230
Rotherhithe—39, Dilston-gr., u.t. 61 yrs., g.r. £5, r. £36 p.a.	150

By H. W. ILES.

Leyton—3, 4, and 5, Wingmore-ter., u.t. 76 yrs., g.r. £15, r. £53 p.a.	230
Plaistow—5 to 9, Railway-ter., u.t. 80 yrs., g.r. £18, r. £62 p.a.	480
Ilford—1, Read's-pl., u.t. 84 yrs., g.r. £6, r. £20 p.a.	70
No. 7, Read's-pl., u.t. 84 yrs., g.r. £6	75

By C. C. & T. MOORE.

East Dulwich—48 and 50, Upland-rd., u.t. 67 yrs., g.r. £9, r. £63 p.a.	400
Limehouse—39, Pigott-st., u.t. 56 yrs., g.r. £4	300
Mile-end—101, Dempsey-st., u.t. 24 yrs., g.r. £5, r. £30 p.a.	230
Bow—150, 152, 162, and 164, Campbell-rd., u.t. 73 yrs., g.r. £15, r. £124 p.a.	790
Nos. 176 to 182 (even), Campbell-rd., u.t. 73 yrs., g.r. £15, r. £123. 12s. p.a.	930
Nos. 186, 190, and 192, Campbell-rd., u.t. 73 yrs., g.r. £10, r. £115 p.a.	1,000
Nos. 1 to 13 (odd), Knapp-rd., u.t. 73 yrs., g.r. £21, r. £197 p.a.	1,110
Bromley-by-Bow—12, Rounton-rd., u.t. 73 yrs., g.r. £3. 15s., r. £30 p.a.	210
51 to 57 (odd), Rounton-rd., u.t. 73 yrs., g.r. £16, r. £120 p.a.	800
8 and 10, Glaucus-st., f., r. £47 p.a.	450

By H. J. BLISS & SONS.

Mile-end—20 and 22, Lognor-rd., u.t. 75 yrs., g.r. £7, r. £47 p.a.	280
Walthamstow—64 to 68 (even), Boston-rd., f., r. £82 p.a.	480
Hoxton—42, Whitmore-rd., u.t. 30 yrs., g.r. £5, r. 46 p.a.	470
Hackney—102, Mare-st., f., o.r. £45	600
Shoreditch—34, Scrutton-st., u.t. 75 yrs., g.r. £30, r. £70 p.a.	350
Stratford—17 to 53 (odd), William-st., u.t. 75 yrs., g.r. £60, r. £468 p.a.	2,870

By NEWSON & HARDING.

Kingsland-rd.—F.g.r. of £100, with reversion in 43 yrs.	2,645
243, 245, and 247, Kingsland-rd., f., r. £90 p.a.	2,020
F.g.r. £350, with reversion in 43 yrs.	9,870
F.g.r. of £50 p.a., with reversion in 3 yrs.	900

JUNE 21.—By G. NEWMAN.

Blackfriars, 11, Stamford-st.—A profit rental of £180 a yr., term 78 yrs.	1,650

By R. W. SCORELL.

Chislehurst—9 and 11, Stockman's-row, f.	1,435
Belvedere, Kent—A plot of f. land, 2a. 1r. 8p.	1,000
F. plantation and meadow, 6a. 3r. 19p.	2,350

By DOLLEMAN & PEARCE.

Belsize-park—1, Lancaster-stables, u.t. 74 yrs., g.r. £5	800
Barnsbury—18, Hemingford-rd., u.t. 47 yrs., g.r. £6, r. £38 p.a.	305

By FULLER & FULLER.

Norwood, Auckland-hill—"Rose Villa," f.	1,100
Mile-end—45, 47, and 49, Shandy-st., and 230, 240, and 242, Bow Common-la., u.t. 36 yrs., g.r. £45, r. £158	400
Bromley—8 and 9, Prospect-pl., u.t. 80 yrs., g.r. £10	60

By HARDS & BRADLEY.

Hither-green—94 to 100 (even), Hither Green-lane, f.	1,500

By FURNER, PRICE, & FURNER.

Bethnal-green—18, Nottingham-st., and 10, 11, and 12, Waterloo-ter., u.t. 29 yrs., g.r. £20, r. £105 p.a.	365
Hammersmith—An i.g.r. of £10 a year, term 50 yrs.	70
Camberwell—5 to 8, Clarendon-st., u.t. 37 yrs., g.r. £14, r. £61 p.a.	400
Lambeth—16 to 22 (even), Vauxhall-walk, u.t. 36 yrs., g.r. £16, r. £161 p.a.	900

JUNE 21.—BY BAKER & SONS.

Hampstead—"West End House," and 12a. 3r. 30p., f.	£32,000
Stanley-gardens—"Stanley House," u.t. 74 yrs., g.r. £22. 10s., e.r. £120 p.a.	550
Westerham, Kent—An enclosure of land, 7a. 2r. 28p., f.	2,500
An enclosure of land adjoining, 5a. 3r. 4p., f.	1,860
"Dunsdale Farm," and 19a. 2r. 1p., f.	4,450
F. market-garden and fruit land, 17a. 2r. 21p.	2,000
F. arable pasture and woodland, 18a. 0r. 31p.	2,600

[*Contractions used in this list.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; yd. for yard, &c.]

MEETINGS.

SATURDAY, JUNE 29.

Architectural Association.—Third vacation visit,—to the Halls of several City Companies (see advt. in last week's *Builder*).

St. Paul's Ecclesiological Society.—Visit to Norwich, under the guidance of Dr. Bensly. Train leaves Liverpool-street at 8.40 a.m.

MONDAY, JULY 1.

Royal Institution.—General Monthly Meeting. 5 p.m.

Clerks of Works' Association (Carpenters' Hall).—Paper by Mr. W. Horn on "Turkish Baths." 8 p.m.

TUESDAY, JULY 2.

Glasgow Architectural Association. — Mr. W. J. Anderson on "The Three Periods of the Italian Renaissance."

Institution of Mechanical Engineers.—Opening of the Summer Meeting, to be held in the Conservatoire des Arts et Métiers, Paris. Paper by M. A. Ansaloni, describing "The Lifts in the Eiffel Tower." M. Gustave Eiffel will give results of working to date.

WEDNESDAY, JULY 3.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting, 8.30 p.m.

Institution of Mechanical Engineers.—Paris meeting (continued).

THURSDAY, JULY 4.

The Royal Archæological Institute.—(1) Professor B. Lewis on "Roman Antiquities of the Middle Rhine." (2) The Rev. E. S. Dewick on "A Manuscript of Sarum Hours." 4 p.m.

Institution of Mechanical Engineers.—Paris meeting (continued).

Miscellanea.

Royal Meteorological Society.—The last meeting of this Society for the present session was held on Wednesday evening, the 19th inst., at the Institution of Civil Engineers, 25, Great George-street, Westminster; Dr. W. Marcet, F.R.S., President, in the chair. Mr. W. Marriott gave a very graphic and interesting account of the recent thunderstorms which have prevailed over this country. On Sunday, June 2, a thunderstorm passed across the country in a northerly direction from Wiltshire about 3 a.m., reaching Edinburgh by 10.44. It travelled at the rate of about fifty miles an hour. It is possible that this storm travelled still further north, and reached Kirkwall at 3.37 p.m. A severe thunderstorm prevailed over the neighbourhood of the Tweed between 11 a.m. and noon, and was accompanied by hail of very large size, some of the stones being 5 in. in circumference. A very destructive storm occurred over the whole of the north-west of England and south of Scotland during the afternoon; much damage was caused by lightning, and very large hail fell over an extensive area. Some of the hailstones measured 7 in. in circumference and weighed 7 oz. During the night of the same day a severe thunderstorm prevailed over Norfolk, which was also accompanied by very large hailstones, some of which were 5 in. to 6 in. in circumference. On Thursday, the 6th, thunderstorms prevailed during the afternoon over the whole of the south-east of England. That which passed over the Metropolis about nine o'clock was remarkable for the brilliant and continuous display of lightning. During the same night and in the early morning of the following day a very destructive storm prevailed over the Eastern Counties, much damage being done by the lightning in the north-west of Norfolk. Severe hailstorms occurred between two and three a.m. both at Margate and Ipswich. During the afternnon of the 7th, destructive thunderstorms prevailed over the whole of the southern counties, much damage being done by lightning; while at Tunbridge Wells there was a most remarkable hailstorm. One of the hailstones which was weighed was actually half a pound in weight. An interesting collection of upwards of forty photographs of lightning taken during the storm on June 6 was also exhibited to the meeting. In addition to the sinuous, ribbon, and meandering flashes of lightning, several photographs showed knotted, multiple, and dark flashes.

Open spaces for Public Recreation.—At a sitting of the Consistory Court, held on the 21st inst. in St. Paul's, Dr. Tristram, Q.C., Chancellor of the Diocese, granted a faculty to authorise the laying out of St. James's, Clerkenwell, Churchyard, in terms of the Metropolitan Open Spaces Act, and the use of a portion of the ground for widening the adjacent St. James's-walk. The Vestry will bear the expense, estimated at 1,100*l.* The present church, dedicated to the apostle and martyr St. James-the-Less, first bishop of Jerusalem, was begun in December, 1788, and consecrated on July 10, 1792. The architect was James Carr, whose son Henry built Salters' Hall. It occupies the site of the St. Mary's Benedictine Convent founded in the year 1100 by Jordan Brisset and Muriel his wife, which at the Suppression was valued as being worth 292*l.* 19s. yearly, and whose lands, of 14 acres in extent, passed ultimately to the Cavendishes. The old church underwent various extensive repairs on three occasions during the seventeenth century. In the Crowle Pennant, at the British Museum, are preserved a unique set of water-colour drawings of many of the numerous monuments and tablets which are specified by Hatton (1708) as being in the church at his day,—including those to Elizabeth, wife to William (Cecil) Earl of Exeter, who "died at her house called St. John's, the 26th day of February, 1653;" Sir William Weston, last prior of St. John of Jerusalem, who died May 7, 1540; and the Lady Elizabeth (died 1585), wife to Sir Maurice Berkeley, after whose family Berkeley-street in this parish is named, and some of which memorials were removed into the existing church. In the burial-ground were interred John Sumner and Richard Perkins, famous actors of the pre-Restoration period, and John Weever, author of the "Funeral Monuments," its preface dated "from my house in Clerkenwell-close, this 28th of May, 1631," who died in the following year. Due care will be taken of the graves and stones in the churchyard. On Tuesday last, the 25th inst., the Duke of Cambridge formally opened the graveyard of St. Alphege Parish Church, Greenwich, an area of about three acres, which has been secured for public enjoyment through the exertions of Lord Meath's Metropolitan Gardens Association, and is now placed in charge of the Greenwich Board of Works. This church was rebuilt in 1718, from the designs of John James. Here were buried Tallis, the composer; Lavinia, Duchess of Bolton; General Wolfe; and Mr. Angerstein, whose gallery formed the nucleus of our national collection of pictures. We may add that the organ of St. James's, Clerkenwell, built by Richard Bridges, was removed, as we have been informed, to Beccles, Suffolk, in 1796.

Builders' Clerks' Benevolent Institution.—A special general meeting of the donors and subscribers to this institution was held at the offices, 21, New Bridge-street, E.C., on Tuesday, the 25th inst., for the purpose of electing a pensioner on the Relief Fund. The applicant was Mrs. Charlotte Tucker, whose case had been fully inquired into and found eligible by the Committee. Being the only candidate, Mrs. Tucker was elected by show of hands, making up the number of pensioners now on the books of the institution to eighteen. The chair was occupied by Mr. H. W. Parker (Messrs. W. Cubitt & Co.), in the absence of the President, Mr. John Aird, M.P., who was unable to attend the meeting.

The "Butter-walk," Dartmouth.—At a meeting of the committee of the Architectural Association, held June 21, 1889, it was resolved that:—"This Committee having heard of the proposed demolition of the 'Butter-walk,' Dartmouth, for the purpose of erecting a new post-office, desires to record an emphatic protest against a measure which would deprive the town of an extremely interesting and beautiful example of domestic architecture, not merely of local interest, but an object of admiration and regard to all lovers of our national Art."

Architectural Partnership.—Mr. Henry Spalding writes from Queen-street, Cheapside: "In consequence of the death of Mr. Patrick Auld, I have taken into partnership Mr. Alfred W. S. Cross, A.R.I.B.A., of Hastings and London. The name of my firm will now be 'Spalding & Cross.'"

St. Edmund the King and Martyr, Lombard-street.—This church, we understand, is now threatened with destruction. It is to be hoped that the Ecclesiastical Commissioners will, at all events, not allow the tower to be pulled down.

Death of Dr. Percy, F.R.S.—This distinguished *savant* died on the 19th inst., in his 72nd year. Dr. John Percy was born in Nottingham, and was educated for the medical profession. Establishing himself in practice in Birmingham, he was led by the *genius loci* to take much interest in the chemistry of metallurgical operations, and, according to the *Athenæum*, when the Royal School of Mines was established in 1851, "De la Beche selected Percy for the post of lecturer on metallurgy, a position which he held for twenty-eight years. Abandoning the practice of medicine, he settled in London, and devoted himself to scientific research, taking special interest in the early development of photography. His great object, however, seems to have been the production of an exhaustive treatise on metallurgy, and after years spent in the accumulation of material, his first volume was given to the world in 1861. This dealt mainly with the subjects of fuel, copper, and zinc. It was followed in 1864 by a voluminous treatise on iron and steel, and in due course other volumes appeared, dealing more or less completely with lead, silver, and gold." In 1877 the Iron and Steel Institute recognised Dr. Percy's services to metallurgy by the award of the Bessemer Medal; and only shortly before his death he held the presidency of this Institute. Up to the time of his death he was superintendent of the arrangements for ventilation in the Houses of Parliament. These arrangements are very good, and do not at all merit the harsh things sometimes said of them by Members of Parliament.

Royal Agricultural Show, Windsor.—At Stand No. 134, the St. Pancras Iron Work Company have one of the most generally attractive shows in the yard, as they exhibit a very complete stable with stalls and box, paved, drained, and finished throughout. This company also exhibit various fittings for cowhouses, piggeries, and iron staircases. Messrs. Priestman Bros. (Limited) (Stand No. 297) exhibit three types of engines using common mineral oils for fuel, in lieu of coal. One of them is a 6-h.p. portable engine. Messrs. Wrinch & Sons (Stand 524) have a variety of exhibits, including horticultural buildings, heating apparatus, &c.

Institution of Mechanical Engineers.—In accordance with previous announcements, the summer meeting of this Institution will be held in Paris, and will commence on Tuesday next, July 2. The meetings will be held in the Conservatoire des Arts et Métiers. Among the papers to be read and discussed is the following:—"Description of the Lifts in the Eiffel Tower;" by Mr. A. Ansaloni, of Paris,—supplemented by results of working to date, communicated verbally by Mr. Gustave Eiffel, President of the Société des Ingénieurs Civils.

Daventry Sewerage.—It is reported that the Corporation of Daventry have instructed Mr. Bailey Denton, of Westminster, to prepare a scheme of sewage and sewerage disposal for their Borough.

PRICES CURRENT OF MATERIALS.

TIMBER.	£. s. d.	£. s. d.
Greenheart, B.G. ....ton	6 10 0	7 10 0
Teak, E.I. ....load	11 0 0	15 0 0
Sequois, U.S. ....foot cube	0 2 8	0 3 0
Ash, Canada ....load	3 10 0	5 0 0
Birch ,, ...load	3 10 0	6 0 0
Elm ,, ...load	4 0 0	5 0 0
Fir, Dantsic, &c. ....load	2 0 0	3 10 0
Oak ,, ...load	2 10 0	4 10 0
Canada ....load	5 10 0	7 10 0
Pine, Canada red ....load	3 5 0	4 0 0
,, yellow ....load	3 10 0	5 10 0
Lath, Dantsic ....fathom	4 10 0	5 10 0
St. Petersburg ....fathom	5 0 0	6 10 0
Wainscot, Riga, &c. ....log	2 15 0	4 5 0
Deals, Finland, 2nd and 1st ...std. 100	9 10 0	11 0 0
,, ,, 4th and 3rd ....std.	8 0 0	9 0 0
Riga ....load	7 10 0	8 0 0
St. Petersburg, 1st yellow ....load	11 0 0	15 0 0
,, 2nd ,, ...load	10 0 0	11 0 0
,, white ....load	7 10 0	10 10 0
Swedish ....load	9 0 0	16 0 0
White Sea ....load	9 10 0	17 0 0
Canada, Pine, 1st ....load	16 0 0	26 10 0
,, ,, 2nd ....load	11 0 0	17 10 0
,, ,, 3rd, &c. ....load	8 0 0	10 10 0
,, Spruce, 1st ....load	9 10 0	11 0 0
,, ,, 3rd and 2nd ....load	7 10 0	9 0 0
New Brunswick, &c. ....load	6 15 0	8 15 0
Battens, all kinds ....load	6 10 0	20 0 0
Flooring Boards, sq., 1 in., prepared, First ....sq.	0 11 0	0 14 0
Second ....sq.	0 8 0	0 10 0
Other qualities ....sq.	0 5 6	0 7 0
Cedar, Cuba ....foot	0 0 4½	0 0 4½
Honduras, &c. ....foot	0 0 4½	0 0 4½
Mahogany, Cuba ....foot	0 0 4½	0 0 6½
St. Domingo, cargo average ....foot	0 0 4½	0 0 6½
Mexican ,, ...foot	0 0 4½	0 0 5½
Tobasco ,, ...foot	0 0 5½	0 0 6½
Honduras ,, ...foot	0 0 5½	0 0 6½

TIMBER (*continued*).	£. s. d.	£. s. d.
Box, Turkey ..... ton	4 0 0	12 0 0
Rose, Rio	15 0 0	20 0 0
Bahia	14 0 0	18 0 0
Satin, St. Domingo ..... foot	0 0 6	0 1 0
Porto Rico	0 0 9	0 1 3
Walnut, Italian	0 0 4½	0 0 6½
METALS.		
IRON—Bar, Welsh, in London ... ton	5 5 0	5 10 0
" at works in Wales ...	4 15 0	5 0 0
" Staffordshire, in London ...	5 10 0	6 10 0
COPPER—		
British, cake and ingot ..... ton	45 10 0	46 10 0
Best selected	47 0 0	47 10 0
Sheets, strong	53 0 0	0 0 0
Chili, bars	41 10 0	0 0 0
YELLOW METAL ..... lb.	0 0 5	0 0 5½
LEAD—Sheet, English ..... ton	13 10 0	14 0 0
SPELTER—		
Silesian, special ..... ton	18 7 6	18 10 0

METALS (*continued*).	£. s. d.	£. s. d.
SPELTER—Ordinary brands	18 2 6	18 5 0
TIN—		
Straits ..... ton	88 10 0	0 0 0
Australian	88 10 0	0 0 0
English Ingots	93 0 0	0 0 0
ZINC—English sheet ..... ton	21 0 0	22 0 0
OILS.		
Linseed ..... ton	20 15 0	21 2 6
Cocoanut, Cochin	26 10 0	27 10 0
Ceylon	24 10 0	0 0 0
Palm, Lagos	23 0 0	23 10 0
Rapeseed, English pale	27 10 0	0 0 0
" brown	25 15 0	26 0 0
Cottonseed, refined	25 15 0	27 10 0
Tallow and Oleine	21 0 0	40 0 0
Lubricating, U.S.	5 0 0	6 0 0
" refined	7 0 0	12 0 0
TAR—Stockholm ..... barrel	1 3 0	1 3 6
Archangel	0 15 9	0 16 0

COMPETITION, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITION.

Nature of Work.	By whom Required.	Premium.	Designs to be delivered.	Page.
Shops, Waiting-rooms, &c., Victoria Pier, Douglas	Isle of Man Harbour Commissioners	.....	Not stated.	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Surface Drainage Works, &c.	Aldershot Local Board	*Official*	July 2nd	ii.
Flints	Southend Local Board	P. Dodd	do.	ii.
Making-up and Sewering Roads	Chiswick Local Board ...	A. Ramsden	July 3rd	xii.
Removal of Street and House Refuse	St. Giles (Camberwell) Vestry	do.	July 5th	ii.
Iron Glazed Roof	Elephant and Castle Horse Repository, Lim.	Inkpen & Stallard	July 9th	ii.
Wood Blocks, Thames Ballast and Sand, &c.	Chelsea Vestry	G. R. Strachan	do.	xii.
Brick Tank and Boundary Wall	Stockport Corporation	J. Jacques	do.	xii.
Pipe Sewers, Manholes, &c.	Fulham Vestry	J. P. Norrington	July 10th	xii.
Foundations of New Bankruptcy Offices	Com. of H.M. Works	*Official*	do.	xii.
Paving Works	Greenwich Bd. of Wks.	do.	do.	ii.
Staircase at Lambeth School	Lambeth Guardians	S. R. J. Smith	do.	xii.
Laundry at Borough Hospital	Brighton Town Council	G. R. Andrews	July 11th	xii.
Repairs to Roads, &c., S.E. Hosp. New Cross	Met. Asylums Board ...	Jarvis & Son	do.	xii.
Painting and Repairing Venetian Blinds do	do.	do.	do.	xii.
Painting and other Work do.	do.	do.	do.	xii.
Class-room at Ashford School	West London Sch. Dist.	*Official*	July 12th	xii.
Stoneware Pipe Sewer, Manhole, &c.	Dartford Union	G. H. Tait	do.	xii.
Street Works	Sevenoaks Local Board	Jabez Mann	July 13th	xii.
Brick Sewers	St. Pancras Vestry	W. B. Scott	July 15th	ii.
Station Buildings and other Works	Halifax, H. L. & N. & S. J. Ry. Co.	J. Fraser & Son	Not stated.	xii.
New Cavalry Barracks, Dublin	War Department	*Official*	do.	ii.
Temporary Iron Buildings, New Wandsworth	School Bd. for London	do.	do.	xii.
Forms, Chairs, and Iron Buckets	do.	do.	do.	xii.
Extension of Heating Apparatus, New Boiler House, New W.C.'s, Painting, &c.	do.	do.	do.	xii.
Cleaning and Painting Schools	do.	do.	do.	xii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Clerk of Works	School Bd. for London	3*l.* 3s. per week	July 3rd	xvi.
City Surveyor	Carlisle Corporation ..	350*l.*	July 4th	xvi.
Inspector of Sewers and Drains	Hackney Bd. of Works	3*l.* 3s. per week	July 10th	xvi.
Borough Surveyor	Stratford-upon-Avon Town Council	200*l.*	July 18th	xvi.
County Surveyorships, Ireland	Civil Service Com.	Not stated	July 26th	xvi.
Assistant Surveyor	Llandudno Imp. Com.	do.	Not stated.	xvi.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *Noon on Thursdays.*]

CARDIFF.—For erection of new offices in Bute-road, Cardiff, for Messrs. Cory Bros. & Co., Limited. Messrs. Bruton & Williams, architects, Cardiff:—

Sawle, Worthing	£16,700 0 0
Wilcock, Wolverhampton	15,250 0 0
Jones Bros., Cardiff	14,500 0 0
Symonds, Cardiff	14,050 0 0
Shepton & Sons, Cardiff	13,970 10 0
Shepherd & Son, Cardiff	13,774 0 0
Stephens & Bastow, Bristol	13,499 0 0
Amended Tenders.	
Jones Bros., Cardiff	11,500 0 0
Symonds, Cardiff	11,000 0 0
Shepherd & Son, Cardiff*	10,285 0 0
Stephens & Bastow, Bristol	10,249 0 0

* Accepted.

CARDIFF.—For new malt-house for the Cardiff Malting Company, Limited. Mr. F. Baldwin, architect, Cardiff:—

W. Bowers & Co., Hereford	£8,660 0 0
J. Linton, Newport, Mon.	8,250 0 0
S. Shepton & Son, Cardiff	8,130 0 0
C. Shepherd & Son, Cardiff	7,986 0 0
W. Symonds, Cardiff	7,518 0 0
E. Turner & Sons, Cardiff (accepted)	7,088 0 0

GORING.—For erecting a detached cottage residence, Cleeve, for Mr. E. H. Bayldon. Mr. George W. Webb, architect, 14, Friar-street, Reading:—

G. Lewis, Reading	£590 0 0
T. Higgs, Goring	547 0 0
Bottrill & Son, Reading	497 0 0
J. Smallbone, Streatley (accepted) ...	497 0 0

EASTBOURNE.—For new Cricket Pavilion at the Saffron's Cricket-ground, for the Eastbourne Cricket Club. Mr. Fredk. G. Cooke, architect, 3, Hyde-gardens, Eastbourne, and 6, Guildhall-chambers, E.C. Quantities by Mr. A. T. Cooke, 6, Guildhall Chambers, E.C.:—

C. Tomkinson	£928 0 0
James Peerless	920 0 0
Wm. Gardner	897 0 0
Mark Martin	880 0 0
Samuel Pope	850 0 0
Huggett & Paltenden	848 0 0
Rollason Bros.	835 0 0
Simeon Hart	815 12 6
Wm. Backhurst	795 0 0
Stanbridge & Tapper	777 0 0
James Coster (accepted)	748 0 0

[All of Eastbourne.]

LEE.—For building four shops and residences, High-road, Lee, S.E. Mr. F. Lee, architect:—

Gerrans (accepted)	£2,100 0 0

LONDON.—For alterations, repairs, and additions to No. 31, Queen's-gardens, W. Mr. W. Jacomb Gibbon, architect, 36, Great James-street, Bedford-row, W.C.:—

H. J. Chapman	£697 0 0
A. F. Newton	599 0 0
E. L. Nunn (accepted)	516 0 0

LONDON.—For alterations, repairs, and additions to No. 6, Cleveland-square. Mr. W. Jacomb Gibbon, architect, 36, Great James-street, Bedford-row:—

H. J. Chapman	£649 10 0
E. L. Nunn	597 0 0
A. F. Newton	579 0 0
Macfarlane Bros. (accepted)	523 0 0

LONDON.—For erecting Sanford-lane Mission Hall and premises, Brooke-road, Stoke Newington, N. Mr. W. Whincop, architect:—

Turtle & Appleton	£1,090 0 0
Hayworth & Sons	1,088 0 0
Jas Holloway	1,050 0 0
Coldwells & Son	1,025 0 0
Allen & Son	1,023 0 0
F. Tarrant	985 0 0
W. M. Dabbs	977 0 0

LONDON.—For erecting the St. Matthew's Parochial Hall, Brixton. Mr. Edwin T. Hall, architect, 57, Moorgate-street, E.C.:—

Hosegood	£2,857 0 0
Macey	2,675 0 0
Turtle and Appleton	2,570 0 0
Foster & Dickson (accepted)	2,195 0 0

LONDON.—For sundry works of repairs, drainage, and decorations at the premises named. Mr. Edwin T. Hall, architect, 57, Moorgate-street, E.C.:—

At 10, St. Helen's-place, E.C.

Foster & Dickson	£195 0 0
Woodward (accepted)	180 0 0

At 63, Finsbury New-road, N.

Boden	£495 0 0
Schoolbred & Co.	487 0 0
Foster & Dickson	439 0 0
Hackworth (accepted)	433 0 0

LONDON.—For additions at Metropolitan Chambers, New Broad-street, E.C., for the Metropolitan Railway Company. Mr. George Pearson, architect, 32, Finsbury-pavement. Quantities by Mr. J. Smythe:—

Patman & Fotheringham	£780 0 0
Clarke & Bracey	714 0 0
Lidstone & Son	649 0 0
Peacock Bros.	633 0 0
Killby & Gayford	630 0 0
Colls & Sons	612 0 0
Scrivener & Co.	598 0 0
G. S. Williams & Son	582 0 0
Mark Patrick & Son (accepted)	568 0 0

LONDON.—For additions to No. 11, Church-road, Willesden, N.W., for Mr. Smith. Mr. Stanley Parker, architect and surveyor:—

Easterbrook	£512 10 0
Tennant & Co. (accepted)	478 15 0

LONDON.—For rebuilding of 10 and 11, Friday-street, Cheapside. Mr. Delissa Joseph, architect, 17, Basinghall-street:—

	Stonework.			*Ironwork.*	
	All Portland.		Portland and Bath.		
F. J. Barnes ...	£263 15 0	.....	£234 0 0*	J. Allen, son., & Co.	£430 0 0
J. Stowell	230 10 0	.....	202 15 0	Measures Bros. & Co.	273 19 7
G. Herridge ...	225 0 0	.....	195 0 0	Rownson, Drew, & Co.	268 0 0
	* Accepted at £215.			M. Shaw & Co. (accepted)	245 0 0

LONDON.—For rebuilding the "Victoria," (Kensal-green, for the New Westminster Brewery Company, Limited. Mr. H. W. Budd, architect:—

Bush	£1,190 0 0
Prestige	1,181 0 0
Green & Lee	1,100 0 0
Ford & Sons	1,097 0 0
Charteris	1,080 0 0
Marvin, Wells & Co.	1,040 0 0
Lamble (accepted)	978 0 0

LONDON.—For building addition to the Drovers' Almshouses, Cattle Market, N. Messrs. Lander & Bedells, architects:—

Stevenson	£1,121 0 0
Burman & Sons	1,114 0 0
Ebbage	1,094 0 0
Williamson	1,046 0 0
Mattock Bros.	998 0 0
Lamble (accepted)	985 0 0

LONDON.—For new warehouses, 12 and 13, Kirby-street, Holborn:—

Garlick & Horton, Limited*	£4,129 0 0

* Accepted.
[Five other tenders.]

LONDON.—For alterations and additions to Messrs. Gross, Sherwood, & Heald's premises, Little Lant-street, Southwark. Mr. W. G. Shoebridge, architect, 150, Strand, W.C.:—

W. Scrivener & Co.	£799 0 0
W. & F. Croaker	610 0 0
B. Hosegood (accepted)	598 0 0
Burton & Sons (late)	598 0 0

LONDON.—For alterations, to "College Park Hotel," Harrow-road, for Mr. G. Harris. Mr. J. D. Gracie, surveyor, 122, Shepherd's Bush-road, Hammersmith, W.:—

W. Adams	£965 0 0
J. Tapping	925 0 0
W. H. Lascelles	772 0 0
S. Ransom	764 10 0
Bryceson Bros.	759 0 0
M. Slater	683 0 0
Laundy & Quick	674 15 0
S. E. Taylor	648 0 0
P. Fold	613 10 0
A. & W. Garner	552 0 0

LONDON.—For supplying and fixing one hundred seats in Clissold-park, Stoke Newington, for the London County Council:—

Macfarlane	£400 6 0!
Geo. Smith & Co.	393 10 0
Lazarus	315 0 0
Beanegwyn & Co (Ltd.)	284 17 0
John Grundy	215 0 0
Battie (Worcester)	190 10 0!

Coalbrookdale Co. (Ltd.), Pattern A, £3. 17s. 6d. each; Pattern B, £3. 15s. each; Pattern C, £3 each.

LONDON.—For the repair of two viaducts on the East Park Estate, Hampstead, for the London County Council:—

John Oliver	£1,050	0	0!
Wm. Pearce	891	0	0
H. Fowler	590	0	0
C. H. Hurst	575	0	0
F. C. Cutting	487	0	0!

LONDON.—For painting works, &c., at the Fulham-road Infirmary, for the Guardians of the St. George's Union. Messrs. H. Saxon Snell & Son, architects, London:—

W. M. Littlefield, Lancaster-road, Enfield	£734	0	0
W. Watson, 168, Larkhall-lane, Clapham	616	0	0
Vigor & Co., King-street, Poplar	590	0	0
W. G. Lilly, Whitcomb-street, S.W.*	487	0	0
Geo. Foxley, King-street, Regent-street	476	0	0
W. McCarthy, Oakley-street, Chelsea	465	0	0

*Accepted.

LONDON.—For certain works required at No. 349, Edgware-road, W., for Mr. Chapman. Mr. Arthur Ashbridge, architect, 76, Leadenhall-street, E.C.:—

Marks	£689	0	0
Barnet	613	0	0
Turtle & Appleton	530	0	0
Lusk	495	0	0
Taylor	346	0	0

LONG DITTON (Surrey).—For new billiard-room, &c., at the "Crown and Anchor" Hotel, at Long Ditton, Surrey, for the Isleworth Brewery, Limited. Mr. R. T. Elsam, architect, Kingston-on-Thames, and Hampton Wick. Quantities supplied by the architect:—

T. Hiscock, Hounslow	£391	0	0
W. Callingham, Ditton	381	0	0
C. E. Oldridge & Sons, Norbiton	373	0	0
J. Piller, Teddington (accepted)	357	0	0

READING.—For providing and fixing carved pine panelling in Billiard-room at Caversham Park, for Mr. W. J. Crawshay. Mr. Charles E. Sayer, architect:—

C. Hindley & Sons (accepted)	£369	0	0

RINGMER (Sussex).—For the erection of stables for the Southdown Hunt, at the Kennels, for Mr. R. J. Streatfeild. Mr. Harry Scarlett, LL.B., architect, Uckfield, Sussex:—

W. F. Martin, Ringmer	£787	0	0
H. Card & Son, Lewes	714	0	0
Berry & Bussey, Lewes (accepted)	674	0	0

STONEHOUSE (Gloucestershire).—For building new warehouse, &c., at Stonehouse Mills, for Messrs. R. S. Davies & Sons. Mr. W. Clissold, architect, Stroud:—

Wall & Hook, Brimscombe, Gloucestershire (accepted)	£1,513	15	9

WALTHAMSTOW.—For erecting the Sir George Monoux's Grammar School. Messrs. W. Jacomb Gibbon and J. W. Stanley Burmester, architects, 38, Great James-street, Bedford-row:—

John Maraland	£3,255	0	0
Edward Good	3,238	0	0
E. Fuller	3,206	0	0
James Reed	3,190	0	0
Jos. Hollond	3,168	0	0
Dove Bros.	3,125	0	0
Woodward & Co.	3,099	0	0
W. Shurmer	3,060	0	0
E. Lawrence & Sons	3,050	0	0
W. H. Lascelles	2,998	0	0
Jas. Morter	2,993	0	0
Macfarlane Bros.	2,988	0	0
S. J. Scott	2,973	0	0
Green & Lee (accepted)	2,895	0	0

Shops at Balham.—The architect for these shops, for which the list of tenders appeared on p. 477 of our last issue, is Mr. J. Nixon Horsfield, not Horsfold, as printed.

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TO CORRESPONDENTS.

J. H. (graining no doubt is better done well than ill, but still better not done at all).—T. H. (the question is purely a legal and a social one, and therefore not within our province).—S. W.—E. F.—W. S.—A. E. W.—H. T. (no use whatever to ask the question on the basis of a mere sketch section. It could only be decided in reference to an accurate drawing *to scale*).—D. A. (no enclosure sent; hence unintelligible; but we regard the matter as done with for the present).—S. & M. (should send amounts).—S. P. (ditto).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

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Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds, and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.

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The Builder

AN

✣ ILLUSTRATED ✣ WEEKLY ✣ MAGAZINE ✣

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR, SANITARY REFORMER, AND ART-LOVER.

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VOLUME LVII.—JULY TO DECEMBER, 1889.

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